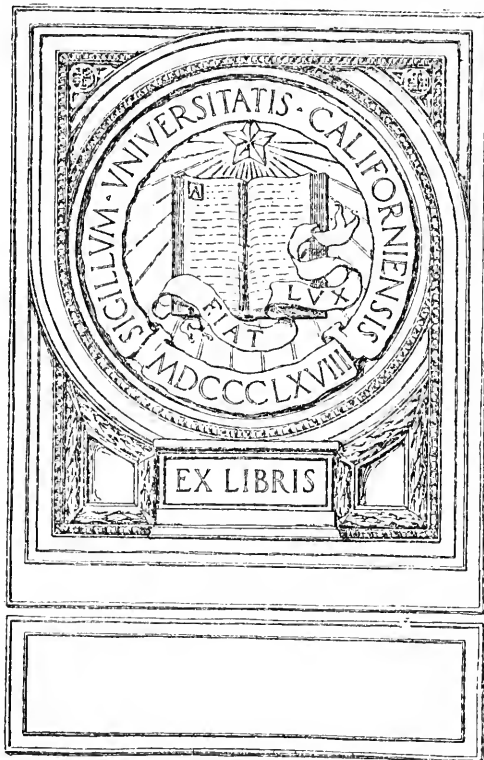


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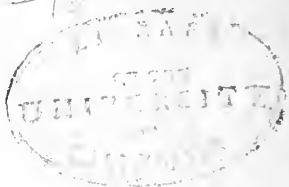


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Current Problems  
Number 12

UNIV. OF  
CALIFORNIA



A HISTORY OF PUBLIC-SCHOOL  
SUPPORT IN MINNESOTA  
1858 TO 1917

BY

FRANCES ELIZABETH KELLEY, M.A.



Price: 75 Cents

*Published by the University of Minnesota  
Minneapolis, December, 1920*

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## PREFACE

Underlying every educational problem is the financial one, that of school support. Adequate buildings, better trained teachers, a more vital curriculum can be provided only as sufficient revenues are, first, furnished and, second, distributed in a manner to secure results commensurate with expenditure. Indeed, there is little doubt that a large proportion of the educational difficulties existing in the majority of our states are due to their antiquated systems of school finance. Methods and policies inherited from colonial days are still followed in many of our states, despite the fact that their inevitably disastrous effects have been pointed out again and again by students of school finance. Rapidly growing demands for vastly increased expenditures make reform imperative. But before we can undertake to formulate and adopt new laws and new policies it is necessary to know those now in force and the effects of the same. Nevertheless, at the present time such knowledge is exceedingly difficult to obtain. Indeed there are states in our Union in which not a single official report shows the total expenditure for schools.

In view of all these facts, and in view of the long standing need in practically every state in the Union of a thorough-going revision of school finance laws, policies, and methods, it is surprising that the subject has received so little attention from scientific students of education. It is true that several important and valuable studies have appeared, but these have limited themselves either to certain selected aspects of the problem, or else to a few types of funds. What is needed first of all is a complete and detailed study of the systems of school support in a number of individual states. Such complete studies must take into account not two or three but every type of school fund, state, county, and district, permanent and current. It is because Miss Kelley has done this in her study of the history of school support in Minnesota that her work is a distinct contribution to the scientific literature of an all important subject. Not only is it a distinctive contribution, but one which may, both in its method and in its scope, well serve as a model for similar studies of other states.

Miss Kelley has not confined herself to a description of Minnesota's existing system of school support, but has traced the genesis of this system from the time of the State's admission into the Union. Consequently her study presents us with both an account of what now is and an explanation of why it is. Her work throughout bears the marks of indefatigable care, conscientiousness, and zeal. To one who has long been deeply interested in the problems of school finance and who has followed closely the development of the present study, it seems not too much to say that the importance of Miss Kelley's study and the quality of her work can scarcely fail to gain quick recognition, and that her history of school support in Minnesota will be given a place both permanent and honorable among scientific studies of the economic aspects of public education.

FLETCHER HARPER SWIFT

THE UNIVERSITY OF MINNESOTA,

OCTOBER 11, 1920.

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# A HISTORY OF PUBLIC-SCHOOL SUPPORT IN MINNESOTA, 1858 TO 1917

## CHAPTER I

### INTRODUCTION

#### PRESENT SOCIAL AND EDUCATIONAL CONDITIONS —UNITS OF ADMINISTRATION— CLASSES OF SCHOOLS

In 1913 the total expenditure for common schools<sup>a</sup> in the United States was \$555,077,146.<sup>1b</sup> This amount was raised in the forty-eight states by widely varying methods. In many states the existing method of school support is not the result of any scientific plan based upon sound economic and educational principles, but is merely a chaotic system growing out of successive attempts, some legislative, others administrative, to meet temporary needs and situations. There is no more fundamental problem in American education than the financial one. The amount of available school revenues determines the character of buildings and equipment, the quality of teachers, and, consequently, to a large extent, the quality of teaching. Those political and administrative units which furnish the major portion of school support exercise the strongest influence over school policies. The mode of apportionment of such moneys determines the educational standards and the lines along which the schools of the community develop.

The problem of school support in the United States has been treated in certain studies of the permanent school funds and of state aid, but for the most part specific information as to the school revenues of any state is scattered through the pages of state reports and statute books. The present study will attempt to trace the history of school support in one state, Minnesota, from 1858 to 1917. This covers the period from the admission

<sup>1</sup> *Rept. U. S. Commissioner of Educ., 1916* 2:33 Table 14.

<sup>a</sup> Includes public elementary and high schools. See *Rept. U. S. Commissioner of Educ., 1916* 2:15.

<sup>b</sup> Data for 1913-14 are used here owing to the fact that they are the latest available for the whole United States.

of the state into the Union to the latest date for which information is available at this time.

In order to approach intelligently our specific problem of school support, it is necessary to survey briefly some of the more important social and industrial conditions underlying the general educational situation, the salient characteristics of the school system, and its general organization.

#### EDUCATIONAL RANK OF MINNESOTA

Something of the general educational situation may be inferred from the following tables which show Minnesota's rank in the Union<sup>c</sup> in the year 1913-14 with regard to wealth and to certain matters pertaining to the school system.

TABLE I  
EDUCATIONAL RANK OF THE STATE OF MINNESOTA

	RANK OF MINNESOTA
Total area (80,858 square miles).....	13
Value of taxable property.....	10
Total valuation of property.....	11
Total expenditure for education.....	10
Expenditure for education per child.....	14
Literacy.....	9
School population (children 5 to 18 years).....	19
Per cent of school population enrolled.....	28
Per cent of enrollment in attendance.....	18
Length of school term.....	27.5

TABLE II  
EXPENDITURE FOR EDUCATION IN MINNESOTA 1905-15

YEAR	TOTAL EXPENDITURE	TOTAL ENROLLMENT	EXPENDITURE PER CHILD
1905.....	\$ 8,954,064.26 <sup>2</sup>	430,005 <sup>1</sup>	\$20.82
1915.....	19,833,230.00 <sup>3</sup>	466,060 <sup>5</sup>	42.55

#### DISTRIBUTION OF POPULATION AND WEALTH

Minnesota's school problem is essentially a rural one, with great inequality of educational opportunity as the most serious

<sup>2</sup> *Fourteenth Bienn. Rept. Minn. Supt. of Public Instr., 1905-6* p. 26.

<sup>3</sup> *Nineteenth Bienn. Rept. Minn. Dept. of Educ., 1915-16* p. 199 Table 18.

<sup>4</sup> *Fourteenth Bienn. Rept. Minn. Supt. of Public Instr., 1905-6* p. 24.

<sup>5</sup> *Nineteenth Bienn. Rept. Minn. Dept. of Educ., 1915-16* p. 174.

<sup>c</sup> Including the forty-eight states and the District of Columbia.

defect. Wealth and population are very unequally distributed over the state; 70 per cent of the people live outside the cities of ten thousand or more, and the urban population is gathered into comparatively few cities. St. Paul and Minneapolis contain more than 25 per cent of the total population;<sup>6</sup> Duluth contains 3 per cent; and these three cities together with Mankato, St. Cloud, Stillwater, Virginia, and Winona, each of which has a population of more than ten thousand and fewer than twenty thousand, contain approximately 31 per cent of the total population of the state.

The northern part of the state, where the population is least dense, contains rich mineral deposits. The central and southern sections are excellent agricultural regions. In 1909 Minnesota ranked eleventh among the forty-eight states of the Union in regard to the total value of the farm crops produced.

The great differences in population are apparent from the average population per square mile of the counties of the state, varying as it does from fewer than 2 inhabitants per square mile in Cook County to 90 or more in Hennepin and Ramsey Counties.

The valuation of taxable property varies from \$1,992,684 in Cook County to \$324,256,080 in St. Louis County; the per capita expenditure for each pupil enrolled ranges from \$15.63 in Beltrami County to \$106.97 in Cook County with its small property valuation and population of fewer than two to the square mile. Benton County raises \$1.74 by local taxation for each dollar of school money received from the state, while Cook County raises \$5.80, and Hennepin County \$8.73.<sup>4</sup>

The following table presents the facts concerning the density of population, the valuation of taxable property, the rate of special tax levies, the per capita expenditure for schools, and the comparative amounts of school support derived from county and from local sources for each county of the state. These statistics show which counties are taxing themselves to the point of sacrifice on behalf of their schools and which are depending upon state funds as a substitute for, rather than a supplement to, local funds.

<sup>6</sup> *Thirteenth Census of the U. S., 1910* 2:959.

<sup>4</sup> See Table III.

TABLE III

(1) POPULATION, (2) TOTAL VALUATION OF TAXABLE PROPERTY, (3) AVERAGE RATE OF SPECIAL SCHOOL TAX FOR 1915-16, (4) PER CAPITA EXPENDITURE FOR EACH PUPIL ENROLLED, (5) AMOUNT RAISED BY LOCAL TAXATION FOR EACH DOLLAR OF STATE AID, FOR COUNTIES OF THE STATE OF MINNESOTA

COUNTIES	POPULATION PER SQUARE MILE <sup>a</sup>	TOTAL VALUATION OF TAXABLE PROPERTY EXCLUSIVE OF MONIES AND CREDITS FOR 1915 <sup>b</sup>	AVERAGE RATE OF SPECIAL SCHOOL TAX IN MILLS VOTED FOR THE YEAR 1915-16 <sup>c</sup>		PER CAPITA EXPENDITURE FOR EACH PUPIL ENROLLED <sup>d</sup>	AMOUNT RAISED BY LOCAL TAXATION FOR EACH DOLLAR RECEIVED FROM THE STATE <sup>e</sup>
			HIGH- AND GRADED- SCHOOL DISTRICTS	RURAL- AND SEMI- GRADED-SCHOOL DISTRICTS		
Atkin.....	2-6	\$5,955,503	20.8	16.2	\$45.04	\$2.82
Anoka.....	18-45	5,814,580	18.1	7.7	60.98	5.30
Becker.....	6-18	8,489,968	16.6	8.9	29.00	2.37
Beltrami.....	2-6	7,835,791	..... <sup>g</sup>	14.0	15.63	3.66
Benton.....	18-45	4,712,974	..... <sup>g</sup>	..... <sup>g</sup>	20.50	1.74
Big Stone.....	18-45	6,575,311	..... <sup>g</sup>	..... <sup>g</sup>	78.67	5.09
Blue Earth.....	18-45	19,284,111	..... <sup>g</sup>	..... <sup>g</sup>	33.89	3.02
Brown.....	18-45	13,353,568	17.2	2.2	36.01	3.02
Carlton.....	18-45	6,191,461	29.2	17.0	46.46	2.84
Carver.....	45-90	9,780,727	15.6	2.5	42.21	3.31
Cass.....	2-6	5,493,871	40.0	15.0	45.63	2.18
Chippewa.....	18-45	9,499,010	..... <sup>g</sup>	..... <sup>g</sup>	48.59	4.65
Chicago.....	18-45	5,696,071	17.6	5.4	32.14	1.91
Clay.....	18-45	12,801,723	..... <sup>g</sup>	..... <sup>g</sup>	50.57	3.24
Clearwater.....	6-18	2,831,972	21.0	10.6	55.27	4.04
Cook.....	Less than 2	1,992,684	..... <sup>g</sup>	..... <sup>g</sup>	106.97	5.80
Cottonwood.....	18-45	11,672,132	19.9	2.6	30.81	2.23
Crow Wing.....	6-18	13,502,361	15.0	10.0	58.28	6.20
Dakota.....	18-45	14,199,580	..... <sup>g</sup>	..... <sup>g</sup>	35.76	2.81
Dodge.....	18-45	8,539,505	..... <sup>g</sup>	..... <sup>g</sup>	51.69	3.30



TABLE III—Continued

COUNTIES	POPULATION PER SQUARE MILE <sup>7c</sup>	TOTAL VALUATION OF TAXABLE PROPERTY EXCLUSIVE OF MONEYS AND CREDITS FOR 1915 <sup>6c</sup>	AVERAGE RATE OF SPECIAL SCHOOL TAX IN MILLS VOTED FOR THE YEAR 1915-16 <sup>9</sup>		PER CAPITA EXPENDITURE FOR EACH PUPIL ENROLLED <sup>10</sup>	AMOUNT RAISED BY LOCAL TAXATION FOR EACH DOLLAR RECEIVED FROM THE STATE <sup>11</sup>
			HIGH- AND GRADED- SCHOOL DISTRICTS	RURAL- AND SEMI- GRADED-SCHOOL DISTRICTS		
Douglas.....	18-45	8,236,145	..... g	..... g	57.09	4.24
Faribault.....	18-45	15,706,493	..... g	..... g	33.45	2.47
Fillmore.....	18-45	16,670,170	..... g	..... g	38.37	2.09
Freeborn.....	18-45	15,478,565	12.9	3.2	36.47	3.37
Goodhue.....	18-45	17,708,085	17.3	3.8	42.16	3.32
Grant.....	6-18	6,220,541	14.2	4.0	39.11	2.74
Hennepin.....	90 or more	222,184,061	..... g	.....	52.60	8.73
Houston.....	18-45	7,110,355	17.8	4.2	27.35	1.99
Hubbard.....	6-18	3,476,089	..... g	..... g	27.09	.89 <sup>10</sup>
Isanti.....	18-45	4,022,455	..... g	..... g	23.00	1.65
Itasca.....	6-18	25,178,517	..... g	..... g	70.09	3.80
Jackson.....	18-45	13,717,640	22.8	3.2	41.08	2.39
Kanabec.....	6-18	3,133,609	17.0	9.6	31.07	2.41
Kandiyohi.....	18-45	11,396,093	16.6	3.4	27.58	1.97
Kittson.....	6-18	6,476,307	..... g	..... g	32.51	2.32
Koochiching.....	2-6	6,591,380	53.7	48.0	69.57	2.77
Lac qui Parle.....	18-45	12,210,181	19.5	3.4	35.57	2.32
Lake.....	2-6	3,862,945	..... g	..... g	42.18	2.92
Le Sueur.....	18-45	10,143,131	20.5	3.3	45.29	2.66
Lincoln.....	18-45	7,426,512	..... g	..... g	27.64	1.95

TABLE III—Continued

COUNTIES	POPULATION PER SQUARE MILE <sup>20</sup>	TOTAL VALUATION OF TAXABLE PROPERTY EXCLUSIVE OF MONEYS AND CREDITS FOR 1915 <sup>18</sup>	AVERAGE RATE OF SPECIAL SCHOOL TAX IN MILLS VOTED FOR THE YEAR 1915 16 <sup>9</sup>		PER CAPITA EXPENDITURE FOR EACH PUPIL ENROLLED <sup>10</sup>	AMOUNT RAISED BY LOCAL TAXATION FOR EACH DOLLAR RECEIVED FROM THE STATE <sup>11</sup>
			HIGH- AND GRADED- SCHOOL DISTRICTS	RURAL- AND SEMI- GRADED-SCHOOL DISTRICTS		
Lyon.....	18-45	13,337,371	..... <sup>8</sup>	..... <sup>8</sup>	35.15	2.65
McLeod.....	18-45	11,234,793	..... <sup>8</sup>	..... <sup>8</sup>	33.75	2.10
Mahomen.....	2-6	2,191,872	..... <sup>8</sup>	..... <sup>8</sup>	36.77	2.04
Marshall.....	6-18	10,257,584	..... <sup>8</sup>	..... <sup>8</sup>	53.17	3.84
Martin.....	18-45	14,597,664	20.7	10.3	56.33	4.72
Meeker.....	18-45	10,783,119	..... <sup>8</sup>	..... <sup>8</sup>	28.65	1.89
Millie Lacs.....	18-45	4,239,780	..... <sup>8</sup>	..... <sup>8</sup>	45.72	3.12
Morrison.....	18-45	9,137,721	19.5	6.9	26.23	2.13
Mower.....	18-45	16,615,668	17.7	4.2	49.44	4.11
Murray.....	6-18	11,969,126	21.6	3.2	35.39	2.51
Nicollet.....	18-45	8,815,837	..... <sup>8</sup>	..... <sup>8</sup>	29.79	1.83
Nobles.....	18-45	15,187,496	13.4	3.3	41.71	2.95
Norman.....	6-18	8,077,626	21.0	5.0	33.99	2.54
Olmsted.....	18-45	15,077,037	..... <sup>8</sup>	..... <sup>8</sup>	86.37	7.76
Otter Tail.....	18-45	17,859,134	..... <sup>8</sup>	..... <sup>8</sup>	27.89	2.40
Pennington.....	6-18	4,232,511	..... <sup>8</sup>	..... <sup>8</sup>	34.58	2.57
Pine.....	6-18	6,588,107	..... <sup>8</sup>	..... <sup>8</sup>	30.02	1.62
Pipestone.....	18-45	8,601,381	..... <sup>8</sup>	..... <sup>8</sup>	31.69	2.38
Polk.....	18-45	19,484,697	31.6	5.4	43.61	3.61
Pope.....	18-45	7,399,679	..... <sup>8</sup>	..... <sup>8</sup>	47.97	3.19
Ramsey.....	90 or more	11,925,630	11.9	7.6	43.62	6.08
Red Lake.....	6-18	3,298,717	..... <sup>8</sup>	..... <sup>8</sup>	35.30	2.36
Redwood.....	18-45	15,261,483	18.0	10.0	54.12	3.57
Renville.....	18-45	16,432,760	14.9	3.0	37.33	2.07
Rice.....	45-90	13,651,657	14.0	4.2	64.34	5.81

TABLE III—Continued

COUNTIES	POPULATION PER SQUARE MILE <sup>2a</sup>	TOTAL VALUATION OF TAXABLE PROPERTY EXCLUSIVE OF MONEYS AND CREDITS FOR 1915 <sup>d</sup>	AVERAGE RATE OF SPECIAL SCHOOL TAX IN MILLS VOTED FOR THE YEAR 1915-16 <sup>3</sup>		PER CAPITA EXPENDITURE FOR EACH PUPIL ENROLLED <sup>5b</sup>	AMOUNT RAISED BY LOCAL TAXATION FOR EACH DOLLAR RECEIVED FROM THE STATE <sup>11</sup>
			HIGH- AND GRADED- SCHOOL DISTRICTS	RURAL- AND SEMI- GRADED-SCHOOL DISTRICTS		
Rock.....	18-45	11,625,254	10.1	2.5	32.77	2.70
Roseau.....	6-18	4,863,843	..... g	..... g	32.09	2.33
St. Louis.....	18-45	324,256,080	..... g	..... g	65.79	8.13
Scott.....	18-45	7,444,944	16.5	4.6	33.24	2.12
Sherburne.....	18-45	3,890,895	..... g	15.0	39.49	2.78
Sibley.....	18-45	11,148,900	..... g	..... g	26.65	1.70
Stearns.....	18-45	20,909,913	..... g	..... g	47.09	4.72
Steele.....	18-45	10,476,585	..... g	8.0	28.69	2.00
Stevens.....	6-18	7,320,692	21.5	4.7	41.66	2.77
Swift.....	6-18	9,624,171	..... g	..... g	50.69	3.50
Todd.....	18-45	9,232,141	39.1	..... g	40.51	4.02
Traverse.....	6-18	6,625,562	26.0	3.3	55.68	3.34
Wabasha.....	18-45	10,101,087	55.0	..... g	37.54	2.34
Wadena.....	6-18	3,381,118	27.6	9.3	30.51	2.76
Waseca.....	18-45	8,707,757	20.9	3.2	31.45	1.92
Washington.....	45-90	10,618,457	14.1	6.2	50.46	3.68
Watowan.....	18-45	8,861,040	20.4	2.4	36.37	2.92
Wilkin.....	6-18	7,441,983	23.0	4.7	39.42	2.79
Winona.....	45-90	16,691,690	..... g	..... g	59.05	6.28
Wright.....	18-45	13,287,388	..... g	..... g	34.62	2.09
Yellow Medicine.....	18-45	11,599,879	14.0	..... g	32.04	2.21
Average for State.....						4.03

<sup>7</sup> All data in this column from *Thirtieth Census of U. S., 1910* 2:963.<sup>8</sup> All data in this column from *Rept. Minn. Auditor, 1915-16* p. 554.<sup>9</sup> All data in these columns from *Nineteenth Bienn. Rept. Minn. Dept. of Educ., 1915-16* p. 184 Table 16.<sup>10</sup> All data in this column computed from data given in *Nineteenth Bienn. Rept. Minn. Dept. of Educ., 1915-16* pp. 18-19, Table 7; and pp. 204-5 Table 20.<sup>11</sup> All data in this column from *Nineteenth Bienn. Rept. Minn. Dept. of Educ., 1915-16* pp. 18-19 Table 7.<sup>a</sup> Data taken from the map referred to in the numbered footnote. This map merely groups the counties according to population per square mile, e. g., Aitkin County belongs in the group of counties having a population of from 2 to 6 inhabitants per square mile.<sup>f</sup> Report from this county not complete.<sup>g</sup> Not given in report from which these data are taken.<sup>b</sup> Moneys and credits are taxed separately by a uniform state levy. See Chap. III.

## SCHOOL UNITS

The units of organization and administration in the Minnesota school system are the state, the county, and the district. Of these, the state and the district are of greatest importance at the present time in the matter of school support. The state officers in charge of education are (1) the superintendent of education, appointed by the governor and approved by the senate; (2) a deputy superintendent; (3-5) three assistants; (6) a rural school commissioner; and (7) supervisor of school libraries, all of whom (2-7) are appointed by the superintendent of education;<sup>12</sup> (8) the State High School Board.<sup>1</sup> This board is composed of the state superintendent, the president of the State University, the president of the Board of Normal Directors, the superintendent or principal of a high school, and one other person appointed by the governor and confirmed by the senate.<sup>13</sup> Other state officers whose duties include some phase of school administration are (9) the auditor of the state, who has supervision of all state lands;<sup>14</sup> (10) the board of investment, composed of the governor, state treasurer, state auditor, attorney-general, and the president of the board of regents, who have charge of the investing of state trust funds, including the school funds.<sup>15</sup>

There are eighty-six counties in the state; in these the chief educational officer is the county superintendent of schools, who is a local supervisory officer with general advisory duties, elected by the people of the county for a term of four years.<sup>16</sup> In counties in which not all the territory is organized into school districts, there is also a county board of education composed of the chairman of the board of county commissioners, the county superintendent of schools, and the county treasurer,<sup>17</sup> whose duty it is to provide for the education of pupils in the unorganized territory.<sup>18</sup>

School districts in Minnesota are of three kinds: special, independent, and common.<sup>19</sup> The term, consolidated district, also

<sup>12</sup> *Revised Statutes of Minn., 1913* sec. 2870 p. 642.

<sup>13</sup> *Ibid.* sec. 2888 p. 644.

<sup>14</sup> *Gen. Laws of Minn., 1913* chap. 4 sec. 65 p. 20.

<sup>15</sup> *Revised Statutes of Minn., 1913* sec. 5245 p. 1144.

<sup>16</sup> *Ibid.* sec. 810 p. 177.

<sup>17</sup> *Ibid.* sec. 2777 p. 626.

<sup>18</sup> *Ibid.* sec. 2776 p. 626.

<sup>19</sup> *Ibid.* sec. 2671 p. 604.

<sup>1</sup> The law mentions a state board of education, but expressly directs that if that board is not provided for by law, the authority granted it shall vest in the State High School Board and the state superintendent. (*Gen. Laws of Minn., 1915* chap. 296 Sec. 16, p. 419.)

occurs, but this indicates the origin of the district and the type of school maintained rather than a peculiar type of organization,<sup>20</sup> for the law provides that "the board of a consolidated school district shall form, and after the foundation of the consolidated district shall have all the powers, privileges, and duties now conferred by law upon boards of independent districts."<sup>21</sup> While there are no requirements made by law concerning the differences between common and independent districts, it is the evident intention that larger and more populous districts are to be organized as independent districts, since the board of a common-school district of ten or more townships is under the same requirements and provisions as is that of an independent school district.<sup>22</sup> A common-school district elects a school board of three members: a chairman, a treasurer, and a clerk.<sup>23</sup> An independent school district has a board consisting of six members, two of whom are elected each year.<sup>24</sup> The school board of an independent district exercises certain functions, including that of levying the school tax, which in a common district are reserved to the electors. The chief differences between common and independent districts lie in this extension of the powers of the school board of the independent district and in the amount of tax levy permitted. As this concerns school revenues directly, it will be discussed under the head of the sources of local support.

Special districts are those which have been organized under special acts of the legislature. Special legislation in such matters was forbidden by an amendment to the constitution adopted in 1892,<sup>25</sup> but owing to the small number of cities in the state, certain provisions concerning districts containing more than ten, twenty, or fifty thousand inhabitants are practically special legislation. These, however, affect very few communities.

#### PUBLIC SCHOOLS CLASSIFIED AND DEFINED

The statutes of Minnesota classify and define the public schools. The character and amount of state aid given to schools in Minnesota as well as the amount of local tax levy permitted

<sup>20</sup> *Session Laws of Minn., 1915* chap. 238 sec. 4 p. 337.

<sup>21</sup> *Ibid.*

<sup>22</sup> *Gen. Statutes of Minn., 1913* sec. 2785 p. 627.

<sup>23</sup> *Ibid.* sec. 2732 p. 617.

<sup>24</sup> *Ibid.* sec. 2733 p. 617.

<sup>25</sup> *Minn. Constitution* art. 4 sec. 33.

for their support is largely determined upon the basis of the class to which any particular school belongs. It is, therefore, necessary at the outset to present this classification. The laws of Minnesota for 1915 and later years define the various classes of schools more carefully and explicitly than was done in the earlier statutes. As will be observed, however, from the following quotation, there seems to be no clear distinction made between the terms *public school* and *district school*. Aside from this, the classification formally provided in the laws is generally consistent and will be followed in this paper.

The following is the classification and definition provided in the statutes:

All schools supported in whole or in part by state school funds shall be styled *public schools*, and admission to and tuition therein shall be free to all persons between the ages of five and twenty-one years, in the district in which such pupil resides, provided, that the school board of any district may, by resolution, exclude all children under six years of age.<sup>26</sup>

*District schools* are divided into four classes, as follows: (1) high schools, (2) graded schools, (3) semi-graded schools, (4) common schools.<sup>27</sup>

In order to be ranked as a high school, a school must satisfy the following requirements: 1. It shall be in session not less than nine months in the year. 2. It shall admit, free of tuition, students of either sex resident in the state who have passed the prescribed entrance examination. 3. It shall have a regular and orderly course of study as prescribed by the State High School Board and an optional English or business course in addition thereto or in lieu thereof. 4. It shall be subject to the rules and open to the visitation of the State High School Board.<sup>28j</sup>

Graded schools include all schools below high schools which (1) are in session at least nine months in the year; (2) are well organized, having at least four departments in charge of a principal holding a state professional certificate, or a graduate from the advanced course of a state normal school, or of a reputable college or university; (3) have a suitable schoolhouse and other

<sup>26</sup> *Gen. Statutes of Minn., 1913* sec. 2670 p. 604.

<sup>27</sup> *Ibid.* sec. 2798 p. 629.

<sup>28</sup> *Ibid.*

<sup>j</sup> Many of the most important requirements for classification as a high school are determined by the rules of this board.

necessary buildings, library, and apparatus; (4) have regular and orderly courses of study embracing all such branches as may be prescribed by the High School Board.<sup>29</sup>

Semi-graded schools are those not complying with the provisions for high or graded schools, but which (1) maintain a school for at least eight months in a year; (2) are well organized with at least two departments in charge of proficient teachers, at least one of whom holds not less than a first-grade certificate; (3) have a regular orderly course of study and comply with rules established by the state superintendent;<sup>30</sup> (4) have suitable buildings, library, and apparatus.

All other district schools are common schools.<sup>31</sup>

<sup>29</sup> *Gen. Statutes of Minn., 1913* sec. 2799 p. 629.

<sup>30</sup> *Ibid.* sec. 2800 p. 629.

<sup>31</sup> *Ibid.* sec. 2801 p. 629.

## CHAPTER II

### SURVEY OF EXISTING METHODS OF STATE SCHOOL SUPPORT

Present public-school support in Minnesota is divided into two types, state and local.<sup>a</sup> For the purpose of this study, local school support may be defined as consisting of all moneys kept by or returned to the district where they originate, even though they are raised under a compulsory state law. State school support consists of those moneys derived from sources immediately under the control of the state and disbursed by it to the various school units upon other bases than the source of the revenues. State support may be again divided into the moneys arising from permanent or trust funds and those derived from the current revenues of the state. School support in Minnesota is derived from all of these sources. The present chapter is concerned with a study of the system of the state support of public schools.

The total revenues for public schools in Minnesota for the school year 1915-16 amounted to \$21,784,421.82. These were derived from the sources named in the following table.

TABLE IV  
MINNESOTA SCHOOL REVENUES FOR 1915-16<sup>b</sup>

SOURCES	AMOUNT	PER CENT OF TOTAL REVENUE
All sources.....	\$21,784,421.82	100
All state sources.....	4,330,433.37	19+
All local sources.....	17,453,988.45	80+
State apportionment (current school fund).....	2,388,218.70	10+
State special aid.....	1,942,214.67	8+
Local one-mill tax.....	1,510,933.16	7+
Special local tax.....	10,547,366.33	48+
Bonds sold and all other sources...	5,395,688.96	24+

<sup>a</sup> No treatment of federal support of public schools is included here, since it is neither a present nor historical type of support but belongs purely to the future development of the school system.

<sup>b</sup> Data in this table computed from *Rept. Minn. Dept. of Educ., 1916* pp. 18-19 Table 7.



The sources of school support in Minnesota are provided in part by the constitution and in part by statutes. The present state constitution provides:

(1) that the principal from the sale or lease of school lands shall be a permanent school fund,<sup>1</sup>

(2) that not more than one third of said lands may be sold in two years; one third in five years; and one third in ten years; but the lands of greatest valuations shall be sold first; provided, that no portion of said lands shall be sold otherwise than at public sale,

(3) that the income from this fund shall be distributed to the townships of the state in proportion to the number of scholars in them,

(4) that one half of the income from the Swamp Land Fund shall be a school fund,<sup>2</sup>

(5) that no state moneys shall be expended for the support of sectarian schools,<sup>3</sup>

(6) that the permanent funds of the state may be invested in local bonds.<sup>4</sup>

The provision for the investment of the principal of the permanent fund in local bonds was adopted as an amendment in 1904. Its adoption was secured only after it had been repeatedly submitted to the voters of the state. When that provision, in turn, needed revision, no further amendment was offered, but a law was passed by the Legislature of 1913 increasing the required rate of interest to 4 per cent,<sup>5</sup> and under this law the moneys of the trust fund are now invested.

The operation of these clauses indicates the nature of the problem of determining what provisions should be included in a state constitution. The difficulty of changing constitutional provisions is a distinct aid in the maintaining of wise and conservative measures, but is also a great hindrance in making such changes in administration as new conditions may require.

<sup>1</sup> *Minn. Constitution* art. 8 sec. 2.

<sup>2</sup> *Ibid.*

<sup>3</sup> *Ibid.* sec. 3.

<sup>4</sup> *Ibid.* sec. 6.

<sup>5</sup> *Gen. Statutes of Minn., 1913* sec. 5245 p. 1145.

## SOURCES OF STATE SUPPORT

Minnesota derives its revenues for state support of public schools from the two types of sources mentioned above: permanent or trust funds, and the current revenues of the state. These may be divided as follows:

- I. Permanent school funds
  - A. The Permanent School Fund
  - B. The Swamp Land Fund
- II. Current revenues of the state
  - A. The Annual School Fund or special appropriations for school support
  - B. State 1-mill school tax
  - C. Proceeds of certain fines

Five state funds are named in the school laws.<sup>6</sup> The more specific definitions of these funds are found in the later statutes. The constitution of Minnesota provides no name for any of the school funds except the Common School Fund, and here the name and definition are matters of implication rather than of specific provision. A clause of the amendment of 1881 provides that one half of the income from the principal derived from the sale of swamp land "be appropriated to the Common School Fund of the State."<sup>6</sup> Inasmuch as the income from the Swamp Land Fund is disbursed with the other apportioned funds, the term Common School Fund as used here may be regarded as equivalent to the Current School Fund<sup>7</sup> of the Statutes of 1913, that is, the whole available annual revenue apportioned among the schools of the state.

The State has two permanent school funds, the Permanent School Fund and the Swamp Land Fund. These names are used for these funds in the state reports and are established by custom and usage.

<sup>6</sup> *Minnesota Constitution* art. 8, sec. 2.

<sup>7</sup> *Gen. Statutes of Minn., 1913* sec. 2915 p. 648.

<sup>c</sup> No discussion is given of the Teachers' Insurance and Retirement Fund, inasmuch as this fund is derived from assessments upon the members of the fund association and from a special tax, and the fund is not included in any report of educational receipts or expenditures. (See *Session Laws of Minn., 1915* chap. 199, 268.)

In the same way the receipts from the State Teachers' Employment Bureau, which are turned into the general revenue fund of the State, are not included here. (See *Gen. Laws of Minn., 1913* chap. 523.)

Fees collected for teachers' examinations go into the Institute Fund, from which state expenses for holding examinations and teachers' institutes are defrayed.

Definite effort has been made to provide names for the current or annual school revenues, but the result is often confusing rather than helpful. The Statutes of 1915 name and define the following funds: (1) the Endowment Fund, which shall consist of the income from the Permanent School Fund;<sup>8</sup> (2) the Annual Fund, which shall consist of the sums appropriated by the legislature for special aid to public schools or departments in the schools;<sup>9</sup> (3) the Current School Fund, which shall consist of the amount derived from the state 1-mill tax.<sup>10</sup>

In several particulars these titles and definitions are not entirely satisfactory. The definition given for the Endowment Fund is incomplete, since it is provided by law that one half of the income from the Swamp Land Fund be added to that from the Permanent School Fund,<sup>11</sup> and this combined income must be regarded as the Endowment Fund, although it is not specifically so stated. The term Endowment Fund is, itself, misleading, as it might lead the reader to suppose that it referred to the principal of another permanent fund, and that Minnesota possessed a third endowment fund in addition to the two permanent funds mentioned above, while, as a matter of fact, it refers only to the annual income from these funds.

The definition of the Current School Fund is particularly unsatisfactory because this term had already been differently defined in the Statutes of 1913. These provide that the *proceeds of the state 1-mill school tax* "shall be added to the *General School Fund*, which shall then be known as the *Current School Fund*."<sup>12</sup> It is in this sense that the term Current School Fund appears to be used in the report of the Department of Education for 1915-16.<sup>13</sup> Unless this definition of Current School Fund is retained, we are left without any terms to designate the total state school revenues apportioned with the income from the permanent school funds.

<sup>8</sup> *Session Laws of Minn.*, 1915 chap. 296 sec. 1 p. 416.

<sup>9</sup> *Ibid.*

<sup>10</sup> *Ibid.*

<sup>11</sup> *Minn. Constitution* art. 8 sec. 2.

<sup>12</sup> *Gen. Statutes of Minn.*, 1913 sec. 2915 p. 648.

<sup>13</sup> *Rept. Minn. Dept. of Educ.*, 1915 p. 12 Table 3.

Although these titles and definitions are frequently confusing rather than helpful, they are the only ones provided by the laws of Minnesota and will be used here, as far as possible, in the sense apparently intended by law.

#### PERMANENT PUBLIC-SCHOOL FUNDS

We may now turn to a consideration of the permanent public-school funds, of which Minnesota has two, the Permanent School Fund and the Swamp Land Fund. The total income from the Permanent School Fund is devoted to the public schools; one half of the income from the Swamp Land Fund is appropriated to the same use, and the incomes from the two are apportioned together. These are bona-fide trust funds arising from the proceeds of federal-land grants. The principal has always been carefully invested, and the state reports reiterate the statement that not a dollar of the money principal has ever been lost.

According to the report of the state auditor, the Permanent School Fund in 1916 consisted of \$26,411,769.46<sup>14</sup> and 649,129.31 acres of unsold lands, with an estimated valuation of \$3,537,799.40.<sup>15</sup>

In 1916, according to the auditor's report, the Swamp Land Fund consisted of \$5,328,325.35<sup>16</sup> and of 1,378,265.24 acres of unsold swamp lands.<sup>17</sup> The minimum valuation fixed by law for swamp lands is \$5,<sup>18</sup> but the swamp lands sold in 1916 brought an average price of \$6.97.<sup>19</sup> Estimated upon this basis, the value of these unsold lands would amount to approximately \$9,606,508.72. No reliable estimate, however, of the value of Minnesota's swamp land is possible, for title to 1,097,147.35 acres of swamp land is in dispute between the federal government and the state of Minnesota.<sup>20</sup>

In this connection it should be noted that estimates of the value of Minnesota school lands vary widely. The 1913-14 report of the commissioner of education estimates the value of the school and swamp lands at \$180,000,000. It is evident

<sup>14</sup> *Rept. Minn. State Auditor, 1915-16* p. v.

<sup>15</sup> *Ibid.*

<sup>16</sup> *Ibid.* p. vi.

<sup>17</sup> *Ibid.* p. 3.

<sup>18</sup> *Gen. Statutes of Minn., 1907.*

<sup>19</sup> *Ibid.*

<sup>20</sup> *Ibid.* p. xviii.

that this differs greatly from the estimates given above of \$3,537,799 and \$9,606,508.72 respectively for the funds. It is probable that this divergence arises from an attempt, on the one hand, to include the mineral and timber values together with the surface value, while the smaller sums represent the surface value alone.

The management of the principal of the Permanent School Fund and of the Swamp Land Fund is in the hands of the Board of Investment, which is composed of the governor, the state treasurer, the auditor, the attorney-general, and the president of the Board of Regents of the state university.<sup>21</sup> The first three are empowered to act upon loans of trust funds to counties, districts, towns, and cities within the state, but the action of the whole board is necessary for the purchase of any other securities than these local bonds.<sup>22</sup>

Because of the amount of money to be invested annually and the technical nature of some of the investigations which are necessary in order to guard the interests of the state, the Legislature of 1917 empowered the Board of Investment to employ a secretary at a salary of \$3,000 per year. He "shall, under the direction of said Board of Investment, have general supervision of the investigation of applications for loans, the negotiations of new investments, examination of securities, and the records of municipalities applying for loans."<sup>23</sup> Mr. W. H. Lamson was appointed as the first secretary under this act and entered upon his duties August 1, 1917.<sup>e</sup>

The constitution provides for the investment of state trust funds, including the school funds, in bonds of the United States, of Minnesota issued since 1860, of any other state designated by law, or of any county, township, town, city, village, or school district in the state of Minnesota, provided that such bonds bear not less than 3 per cent interest, and together with all other liabilities do not constitute an indebtedness greater than 15 per cent of the assessed valuation of the real estate of the municipality.<sup>24</sup> This constitutional provision is now superseded by

<sup>21</sup> *Gen. Statutes of Minn., 1913* sec. 5245 p. 1144.

<sup>22</sup> *Ibid.*

<sup>23</sup> *Session Laws of Minn., 1917* chap. 271 p. 409.

<sup>24</sup> *Ibid., 1915* chap. 296 sec. 1 p. 416.

<sup>e</sup> Information furnished by the state auditor's office in response to author's personal inquiry, May 4, 1918.

a statute of 1913 requiring that such bonds bear not less than 4 per cent interest.<sup>25</sup>

Investment in bonds issued to aid in the construction of any railway is expressly forbidden.<sup>26</sup>

The following statement of the investment of the Permanent School Fund is taken from the report of the auditor for 1915-16.

TABLE V  
INVESTMENT OF THE MONEY PRINCIPAL OF THE PERMANENT  
SCHOOL FUND<sup>27</sup>

Cash in treasury, (less \$7,780 O. S. warrants).....	\$ 566,148.98
Land contracts <sup>†</sup> .....	5,944,602.83
Bonds as follows:	
Alabama, (\$143,000) 4 per cent.....	138,637.50
Delaware, 3 per cent.....	4,000.00
Massachusetts, 3½ per cent.....	2,595,000.00
Massachusetts, 3 per cent.....	300,000.00
Virginia, (\$714,000) 3 per cent.....	663,600.00
Utah, 3½ per cent.....	100,000.00
Minn. school districts, cities, townships, counties, etc.	15,675,597.15
Minn. inebriate hospital certificates of indebtedness*	30,000.00
Minn. prison building certificates of indebtedness*..	177,000.00
Minn. Armory building certificates of indebtedness*	92,200.00
Minn. Itasca Park land certificates of indebtedness*	125,000.00
Total.....	\$26,411,796.46

Table VI, on opposite page, shows the investment of the Swamp Land Fund.

The provision that no part of the trust funds of the state shall ever be alienated has been very scrupulously observed in Minnesota. In 1917 the state held, representing investments of portions of the Permanent School Fund and of the Swamp Land Fund, certain bonds of other states which bore as little as 3 per cent per annum, but which were not salable at the

<sup>25</sup> *Gen. Statutes of Minn., 1913* sec. 5245 p. 1143.

<sup>26</sup> *Ibid.*

<sup>27</sup> *Rept. Minn. State Auditor, 1915-16* p. v.

<sup>†</sup> Land contracts are those contracts under which settlers are paying for state lands purchased by them.

\* Concerning these investments the state auditor writes as follows:

"The State has no bonded debt, but certificates of indebtedness have been authorized by the legislature for various purposes. Many are held by the school and other state funds. They run only a few years. Payment of the above (state certificates of indebtedness for prison buildings, inebriate hospital, educational buildings, national guard armories, and Itasca Park) are all provided for by special tax levies, except the inebriate hospital certificates, which are payable from the income from the two per cent received from liquor licenses issued by local municipalities." (*Rept. Minn. State Auditor, 1913-14* p. ix.)

price which had been paid for them originally. Since it would be possible to reinvest the proceeds of these bonds in such a manner as to yield the state a higher rate of interest, it was thought wise to sell them. In order to legalize their sale at an apparent loss, the Legislature of 1917 empowered the board to sell them and to make provision to reimburse the permanent funds for this loss.<sup>28</sup> The profits from previous bond sales and an appropriation of \$100,000 were made immediately available for this purpose, and the board was further empowered to cover any prospective loss by creating a fund derived from charging a bonus upon the bonds of municipalities of the state purchased by the board, not to exceed one-fourth per cent per annum for the period of the loan. Exemption from such a bonus is at the pleasure of the board.<sup>29</sup>

TABLE VI  
INVESTMENT OF THE MONEY PRINCIPAL OF THE  
SWAMP LAND FUND<sup>30</sup>

Cash in state treasury, (less \$9,312.50 O. S. warrants) . . .	\$ 81,892.55
Land contracts . . . . .	2,649,312.80
Bonds as follows:	
Virginia (\$100,000) . . . . .	96,980.00
Minnesota school district, township, counties, etc. . .	2,456,140.00
Minnesota Armory Board certificates of indebtedness . .	45,000.00
Total . . . . .	\$5,328,325.35

All state lands, including the school lands, are under the general supervision of the auditor of the state, who has charge of the leasing and sale of them.<sup>31</sup> The amount to be sold in any year is limited to 100,000 acres,<sup>32</sup> and no pine land can be sold until the timber has been sold.<sup>33</sup> The law puts a minimum valuation of \$5 on the school land<sup>34</sup> and swamp land<sup>35</sup> of the state.

#### ANNUAL FUND OR SPECIAL APPROPRIATIONS

The special appropriations for the aid of public schools made by the state legislature are known as the Annual Fund.

<sup>28</sup> *Session Laws of Minn., 1917* chap. 464 p. 765.

<sup>29</sup> *Ibid.*

<sup>30</sup> *Rept. Minn. State Auditor, 1915-16* p. vi.

<sup>31</sup> *Gen. Statutes of Minn., 1913* sec. 65 p. 20.

<sup>32</sup> *Ibid.* sec. 5402 p. 1135.

<sup>33</sup> *Ibid.*

<sup>34</sup> *Ibid.*

<sup>35</sup> *Gen. Statutes of Minn., 1907.*

At the present time the law names twenty-one types of schools, districts, and departments of instruction which are entitled to aid from the Annual Fund.<sup>i</sup> Besides these, the state makes other special appropriations: (1) for schools which are located on Indian reservations, (2) for training schools and teachers' examinations, and (3) for replacing the income lost by the State's use of school lands. For all these purposes, and for the Annual Fund, the Legislature of 1913 appropriated \$2,098,475 for 1915.<sup>36</sup>

#### STATE SCHOOL TAX OR CURRENT SCHOOL FUNDS

For the support of public schools and of the state university a tax of 1.23 mills is levied annually. The proceeds from the .23 mill are appropriated to the state university; the proceeds of the 1-mill tax are added to the General School Fund, which is then known as the Current School Fund.<sup>37j</sup>

#### FINES AND FORFEITURES

The fourth source of state aid is found in the forfeiture for insurance on an excessive valuation, which is payable to the state school fund.<sup>38k</sup>

#### DISBURSEMENT OF STATE AID

Second only in importance to the provision of adequate school revenues is the method of their disbursement, particularly that of the moneys arising from state funds or state taxation. The apportionment of these revenues usually gives the chief, if not the only, means for a centralization of administration and for securing equality of educational opportunities and conditions. If state funds are so disbursed as to encourage or permit some districts to regard them as substitutes for, rather than supplements to, local taxation, they may largely fail of their purpose, namely: to provide adequate and equal educational opportunities for the children of the whole state. And it is with this purpose in mind that the basis of apportionment should be determined.

<sup>36</sup> *Eighteenth Bienn. Rept. Minn. Supt. of Public Instr., 1913-14* p. 14.

<sup>37</sup> *Gen. Statutes of Minn., 1913* sec. 2915 p. 648.

<sup>38</sup> *Ibid.* sec. 3323 p. 741.

<sup>i</sup> These objects benefited by the Annual Fund are discussed in detail under the disbursement of that fund. See p. 24.

<sup>j</sup> This is the definition provided by the Statutes of 1913 and is the meaning of the term as used in current state reports. See chap. I.

<sup>k</sup> Many other fines and forfeitures go to the school fund of the county or township where they are collected and are administered with it by the same officials.



Three types of apportionment are used for state aid in Minnesota: (1) those based upon school attendance, (2) those based upon financial weakness of districts, and (3) flat sums for the benefit of special types of education.

The laws provide a different basis of apportionment, different requirements for participation, and different penalties for misuse for each of the school funds. For this reason the disbursement of each fund will be discussed separately.

#### APPORTIONMENT OF THE CURRENT SCHOOL FUND<sup>1</sup>

The income from the Permanent School Fund, one half of the income from the Swamp Land Fund, and the residue remaining after certain amounts have been subtracted from the proceeds of the state school tax are combined, and the total revenue so derived is designated as the Current School Fund.<sup>39</sup> This money is 'distributed semi-annually to the school districts whose schools have been in session at least six months, in proportion to the number of scholars of school age who have attended school at least forty days during the preceding year.'<sup>40</sup> The constitution provides that distribution be made "to the different townships throughout the state, in proportion to the number of scholars in each township, between the ages of five and twenty-one years."<sup>41</sup> It further adds the requirement of a six months' term of school and defines a "scholar" as a pupil who has been in attendance at school forty days or more. The state superintendent apportions this fund among the counties of the state on the first Monday of March and of October of each year.<sup>42</sup> Upon receiving a copy of such apportionment, the state auditor draws his warrant on the state treasury payable to the state treasurer, for the amount due each county. The state treasurer applies this amount in his semi-annual settlement with each county named in the apportionment, and, if the amount due any county exceeds the amount due from that county for state taxes, he transmits to the county treasurer the amount of such excess.<sup>43</sup> Distribution on this basis entirely fails to further the equalization of educational opportunities, as is apparent from a

<sup>39</sup> *Gen. Statutes of Minn., 1913* sec. 2915 p. 648.

<sup>40</sup> *Session Laws of Minn., 1915* chap. 296 sec. 3 p. 416.

<sup>41</sup> *Minn. Constitution* art. 8 sec. 2.

<sup>42</sup> *Laws of Minn. Relating to the Public School System, 1915* sec. 183 p. 60.

<sup>43</sup> *Gen. Statutes of Minn., 1913* sec. 2896 p. 645.

<sup>1</sup> Current School Fund is used here in the sense of the 1913 definition of that term. See p. 15.

comparison of the amount of state aid received by a twenty-pupil school in a poor district with that received by a forty-pupil school in a populous and wealthy district.

The money thus apportioned can not be used in the support of any sectarian school,<sup>44</sup> nor any school classifying or separating pupils according to race, color, social position, or nationality.<sup>45</sup> Neither can it be used for any other purpose than the payment of the teachers' wages.<sup>46</sup>

Three requirements are made for participation in the Current School Fund. The district must have maintained a school for a term of six months within the year.<sup>47</sup> The term reports must have been made by the teacher to the county superintendent, and by him to the state superintendent on or before September 20th.<sup>48</sup> The third requirement is that no district shall receive in any year from the apportioned fund (i.e., the Current School Fund and local funds apportioned on the same basis) a greater amount than that appropriated by such district from its special and local 1-mill tax for that year, unless such district has levied for such year the maximum amount allowed by law for school purposes.<sup>49</sup>

It is further provided that the year's apportionment shall be forfeited by any district not complying with the law concerning participation and forbidden uses. Besides these penalties put upon the districts, the law provides penalties also for officials who fail to fulfill their duties.

Any treasurer who uses money applicable for teachers' wages for any other purpose shall be personally liable to any teacher who becomes entitled to any part of such fund for such amount.<sup>50</sup>

Any county auditor who fails to make to the state superintendent any report of apportionment required by law,<sup>51</sup> or any county superintendent failing to make required reports to the county auditor or to the state superintendent<sup>52</sup> shall forfeit \$50 to the benefit of the school fund of the county. And no

<sup>44</sup> *Minn. Constitution* art. 8 sec. 2.

<sup>45</sup> *Gen. Statutes of Minn., 1913* sec. 2901 p. 646.

<sup>46</sup> *Laws of Minn. Relating to the Public School System, 1915* sec. 183 p. 60.

<sup>47</sup> *Session Laws of Minn., 1915* chap. 296 sec. 3 p. 416.

<sup>48</sup> *Laws of Minn. Relating to the Public School System, 1915*, note on sec. 181 p. 60.

<sup>49</sup> *Ibid.* sec. 183 p. 60.

<sup>50</sup> *Gen. Statutes of Minn., 1913* sec. 2762 p. 624.

<sup>51</sup> *Ibid.* sec. 2906 p. 647.

<sup>52</sup> *Ibid.* sec. 2907 p. 647.

payment of wages can be made to any teacher who is in default in making required reports.<sup>53</sup>

#### DISBURSEMENT OF THE PROCEEDS OF THE STATE SCHOOL TAX

The net proceeds of the state school tax, sometimes referred to as the Current School Fund,<sup>m</sup> are disbursed in two parts.

1. The state auditor sets aside from it annually an amount not to exceed \$150,000, which is used for the following purposes: (a) to assist districts not having a state high school or graded school where a levy of 15 mills does not raise \$500 for each school in session seven months, (b) to make up any deficit in the Annual Fund. (c) to pay the tuition of non-resident pupils in industrial departments.<sup>54</sup>

2. The balance, as has already been said, is then added to the Endowment Fund and is distributed on the same basis and at the same time as that fund, the whole being known as the Current School Fund.<sup>55n</sup>

Not more than \$200 may be apportioned for the aid of any one school in a district where a levy of 15 mills does not raise \$500 for each school in session seven months.<sup>56</sup> With regard to the use of the fund for the payment of non-resident pupils' tuition, the law says:

The State Board of Education shall make proper rules relating to enrollment, attendance, rates of tuition, payment of endowment and current funds on account of such non-resident pupils.<sup>57</sup>

A further use of the Current School Fund<sup>n</sup> is found in the laws for 1915 which provide that the state superintendent may grant permission to any district having not fewer than five deaf or blind or speech-defective or subnormal pupils between the ages of four and ten years to establish separate classes with separate teachers for such pupils. There shall be paid of the Current School Fund in the state treasury annually in the month of July the sum of \$100 for each defective child instructed in such school or schools.<sup>58</sup>

<sup>53</sup> *Ibid.* sec. 2834 p. 636.

<sup>54</sup> *Session Laws of Minn., 1915* chap. 296 sec. 13 p. 418.

<sup>55</sup> *Gen. Statutes of Minn., 1913* sec. 2915 p. 648.

<sup>56</sup> *Session Laws of Minn., 1915* chap. 296 sec. 13 p. 418.

<sup>57</sup> *Ibid.* chap. 296 sec. 14 p. 418.

<sup>58</sup> *Ibid.* chap. 194 p. 259.

<sup>m</sup> The definition and discussion of this fund will be found on p. 15.

<sup>n</sup> The law was passed in the same year as the act defining the Current School Fund as the income from the state 1-mill tax. See p. 15.

# TABLE VII

## OBJECTS AIDED BY THE ANNUAL FUND\*

SCHOOL, DEPARTMENT, ETC., FOR WHICH APPORTIONMENT IS MADE	REQUIREMENT FOR PARTICIPATION	AMOUNT OF ANNUAL AID
1. Rural school.....	1. In session 8 months..... 2. Teacher holding a first-grade certificate.....	\$150 for each teacher <sup>59</sup>
2. Rural school.....	1. In session 7 months..... 2. Teacher holding a second-grade certificate.....	\$100 for each teacher <sup>60</sup>
3. Associated rural school...	1. Associated with a central school.....	\$50 <sup>61</sup>
4. Central school with which a rural school is associ- ated.....	.....	\$200 for each as- sociated school <sup>62</sup>
5. Graded school.....	1. In session nine months..... 2. In addition, for each grade teacher more than 4, counting the principal as a teacher..... 3. In addition for each high-school teacher.....	\$600 <sup>63</sup> \$100 <sup>64</sup> \$250 <sup>65</sup>
(Aid not to exceed \$1,300 on this basis)		
6. High school.....	1. In session 9 months.....	\$1,800 <sup>66</sup>
7. Agricultural department (Aid not to exceed salaries paid).....	1. In high, graded, or consolidated school	\$1,000 <sup>67</sup>
8. Commercial department..	1. In high, graded, or consolidated school (Aid not to exceed salaries paid)	\$600 <sup>68</sup>
9. Teacher-training depart- ments.	1. In high school..... 2. More than 1 teacher..... 3. More than 2 teachers and not less than 50 pupils.....	\$1,200 <sup>69</sup> \$2,000 <sup>70</sup> (not to exceed) \$2,800 <sup>71</sup> (not to exceed)
10. Consolidated schools....	1. Class A <sup>p</sup> ..... 2. Class B <sup>p</sup> ..... 3. Reimbursed for transportation..... 4. Reimbursed for one fourth the cost of building.....	\$500 <sup>72</sup> \$250 <sup>73</sup> \$2,000 <sup>74</sup> (not to exceed) \$2,000 <sup>75</sup> (not to exceed)
11. Library.....	1. For each teacher employed.....	\$10 <sup>76</sup> (not to ex- ceed \$25)
12. Schools in districts levying a local school tax of more than 20 mills....	1. Annual local tax levy in excess of 20 mills.....	One third of amount raised in excess of that re- ceived from the 20-mills levy.
A. High school.....	.....	\$2,500 <sup>77</sup> (not to exceed)
B. Graded school.....	.....	\$1,800 <sup>78</sup> (not to exceed)
C. Rural school.....	.....	\$200 <sup>79</sup> (per teacher)

<sup>59</sup> *Session Laws of Minnesota, 1915* chap. 296 sec. 4 p. 416.

<sup>60</sup> *Ibid.*

<sup>61</sup> *Ibid.* chap. 296 sec. 12 p. 418.

<sup>62</sup> *Ibid.*

<sup>63</sup> *Ibid.* chap. 296 sec. 5 p. 416.

<sup>64</sup> *Ibid.*

<sup>65</sup> *Ibid.*

<sup>66</sup> *Ibid.* chap. 296 sec. 6 p. 417.

<sup>67</sup> *Ibid.* chap. 296 sec. 7 p. 417.

<sup>68</sup> *Ibid.*

<sup>69</sup> *Ibid.* chap. 296 sec. 8 p. 417.

<sup>70</sup> *Ibid.*

<sup>71</sup> *Ibid.*

<sup>72</sup> *Ibid.* chap. 296 sec. 9 p. 417.

<sup>73</sup> *Ibid.*

<sup>74</sup> *Ibid.*

<sup>75</sup> *Ibid.*

<sup>76</sup> *Ibid.* chap. 296 sec. 10 p. 417.

<sup>77</sup> *Ibid.* chap. 296 sec. 11 p. 417.

<sup>78</sup> *Ibid.*

<sup>79</sup> *Ibid.*

\* A history and more detailed discussion of each of these objects aided by the Annual Fund will be found in Chap. V.

<sup>p</sup> For definitions of these classes of schools, see Chap. V.

## DISBURSEMENT OF THE ANNUAL FUND

In the disbursement of the Annual Fund we find the apportionment both of flat sums and of amounts determined upon various bases. The following types of apportionment appear: (1) flat sums to schools and to departments of instruction, (2) aid on the basis of number of pupils and teachers in various courses, (3) aid according to the amount of local tax levied, and (4) aid on the basis of library equipment.

The importance of this type of state aid may be seen in the objects for which it is apportioned.

As has been stated in an earlier paragraph, the classification of schools in Minnesota (see page 9) is of great importance, because it serves to indicate the requirements for participation in the Annual Fund. The law merely names the types of schools to be aided. The details of the administration of the Annual Fund are left entirely to the State High School Board,<sup>9</sup> who "shall apportion the annual funds and any other sums appropriated by the state to schools and libraries in such manner and upon such conditions as will enable them to perform efficiently the services required by law, and to further the educational interests of the state. To this end the state board shall have power to fix the requirements for receiving and sharing in state aid."<sup>80</sup>

Acting under this provision, the State High School Board has gradually but steadily raised the requirements for participation in state aid, making consistent improvement necessary for the continuation of that aid. The rulings of the board are published as bulletins by the department of education and have all the force of laws.

The requirements are so detailed that space forbids giving them in full here. They cover matters of (1) building and equipment, (2) sanitary conditions, (3) heating and ventilating, (4) school grounds, (5) length of school term, (6) preparation of the teacher, (7) courses of study.<sup>81</sup> The following brief quotations will serve to indicate the definite nature of the requirements.

<sup>80</sup> *Ibid.* chap. 296 sec. 2 p. 416.

<sup>81</sup> *High School Board Rules Relating to High and Graded Schools Bulletin no. 45, May, 1916.*

<sup>9</sup> These duties would have devolved upon the State Board of Education if that body had been organized.

A graded school building must be equipped with a fan system of ventilation. When the outside temperature is lower than 55° above zero Fahrenheit, the fan must be in continuous operation during the entire time the schools are in session.<sup>82</sup>

Book supports shall be provided [in school libraries] to keep the books straight on the shelves.<sup>83</sup>

The rules of the board as applied to graded and high schools are enforced through the efforts of five state inspectors, one of whom must visit and report upon every school applying for state aid. The number of rural schools makes such state inspection impossible with the present meager appropriation for rural inspection purposes, and state support to rural schools is distributed upon the basis of reports made out by local officials and approved by the county superintendent. As long ago as 1906 the inherent dangers attendant upon making a local official serve as a state inspector were observed, and a system of true state inspection of rural schools applying for state aid was urged by the state superintendent.<sup>84</sup>

Besides the requirements put upon the particular types of schools, all districts are required to take an annual school census, and it is made the duty of the state superintendent and of the High School Board to withhold the special state aid until such census has been completed.<sup>85</sup>

Only one prohibition is put upon the expenditure of the Annual Fund. It can not be used for the purchase of any site nor for the erection of any school building.<sup>86</sup>

A large part of the details of administration of the Annual Fund date from 1915, but special appropriations for the aid of particular types of schools have been made since 1878. For the past three years the appropriation and apportionment of the moneys of the Annual Fund have been matters of great interest and debate. The sums appropriated by the legislature have not been sufficient to pay the maximum apportionment due to the districts and schools meeting the requirements. The deficit thus created was distributed proportionately among the various schools. The increase in the deficit appears in the following table.

<sup>82</sup> *High School Board Rules Relating to High and Graded Schools Bulletin no. 45*, May 1916 p. 39.

<sup>83</sup> *Ibid.* p. 34.

<sup>84</sup> *Rept. Minn. Supt. of Public Instr.*, 1905-6 p. 9.

<sup>85</sup> *Gen. Statutes of Minn.*, 1913 sec. 2985 p. 660.

<sup>86</sup> *Gen. Laws of Minn.*, 1911 chap. 341 sec. 3.

TABLE VIII  
DEFICIT IN APPORTIONMENT OF ANNUAL FUND FOR 1915-16<sup>57</sup>

SCHOOLS	1915	1916
High schools including special departments.....	\$162,265	\$278,638
Graded schools and departments.....	44,187	69,933
Consolidated and rural schools.....	209,656	305,513

The following table shows both the apportionment of and the deficit in the Annual Fund and in the portion of the Current School Fund which is set aside for special aid to subnormal classes and to weak districts:

TABLE IX  
SPECIAL STATE AID FOR 1915 AND 1916<sup>58</sup>

KIND OF SCHOOL OR DEPARTMENT	1915			1916		
	NUM- BER AIDED	TOTAL AMOUNT PAID	DEFICIT NOT PAID	NUM- BER AIDED	TOTAL AMOUNT PAID	DEFICIT NOT PAID
High schools.....	221	\$387,751.00	\$ 96,687.75	230	\$322,593.00	\$138,254.00
Graded schools.....	242	176,750.00	44,187.50	241	163,177.00	69,933.00
Agricultural, industrial, and other special de- partments.....	146	231,415.00	57,853.75	555	277,093.00	118,754.00
Association.....		30,894.00	7,723.58		50,470.00	21,630.00
Teachers' training de- partments.....	120	118,512.00		130	151,780.00	
Tuition.....					34,895.00	
Consolidated schools						
Class A.....	62	74,400.00	18,600.00	102	35,700.00	15,300.00
Class B.....	4	3,387.00	864.75	37	6,475.00	2,775.00
Class C.....	35	21,000.00	5,250.00			
Building aid.....		22,363.00			57,092.00	
Transportation aid.....					128,790.00	
Semi-graded schools.....	478	114,240.00	28,560.00	507	110,250.00	47,250.00
Rural schools						
Class A.....	3,618	434,160.00	118,540.00	3,992	419,180.00	179,648.00
Class B.....	1,311	104,880.00	26,220.00	2,018	141,260.00	60,540.00
Class C.....	776	46,560.00	11,640.00			
Reservation schools.....	46	11,287.50		41	8,696.00	
Subnormal classes.....					27,219.00	
15-mill supplemental.....				119	16,239.00	
Total.....	7,059	\$1,777,599.50	\$416,109.33	7,972	\$1,950,909.00	\$654,084.00

<sup>57</sup> *Nineteenth Bienn. Rept. Minn. Dept. of Educ., 1915-16* p. 24.

<sup>58</sup> *Nineteenth Bienn. Rept. Minn. Supt. of Educ., 1915-16* p. 115.

In 1917 the governor vetoed a bill passed by the legislature appropriating moneys to pay the deficit for 1914-15 and 1915-16. Such a deficit can not occur in the 1917-18 aid, since the legislature specifically announced that, if the amount available for this year is not sufficient to pay all claims in full, there shall be a pro rata settlement which shall be final.<sup>89</sup> The attorney-general held that the deficit for 1914-15 and 1915-16 might legally be paid out of the legislative appropriations for state aid for 1916-17 and 1917-18, thus recognizing the legality of the districts' claims against the state.<sup>90</sup> An injunction prevented the State High School Board from taking such action, and the matter was appealed to the State Supreme Court.<sup>91</sup> The court sustained the injunction; the money appropriated was paid out for state aid for the years for which it was appropriated;<sup>†</sup> and any further action must come from future sessions of the state legislature.<sup>‡</sup>

The whole matter of the disbursement of state aid is probably the most pressing problem in Minnesota's school system today. Its lack of recognition of scientific principles, its complexity, and its uncertainty from year to year combine to deprive the moneys distributed of much of their possible value.

<sup>89</sup> *Nineteenth Bienn. Rept. Minn. Supt. of Educ.*, 1915-16 p. 115.

<sup>90</sup> *Twenty-fourth Ann. Rept. Minn. Inspector of State High Schools 1917* p. 9.

<sup>91</sup> *Ibid.*

<sup>†</sup> Information furnished by the State Department of Education in response to author's personal inquiry, April 30, 1918.



## CHAPTER III

### A SURVEY OF EXISTING METHODS OF LOCAL SCHOOL SUPPORT

Local school support constitutes the second main division of the types of school support. In 1916, for every dollar of state aid apportioned to the schools of Minnesota, local units raised \$4.03 in local revenues.<sup>1</sup> The chief interest attaching to local school support in a study of this kind lies in its importance as a measure of the effect of state aid upon the school system. In Minnesota it is important, also, as one of the factors contributing to the inequality of school opportunity already spoken of among the chief defects of the present system.

#### SOURCES OF LOCAL SCHOOL SUPPORT

There are no local permanent or trust funds in Minnesota, and local school support is derived from (1) the county 1-mill tax, (2) the state tax on moneys and credits, (3) miscellaneous fines and forfeitures, (4) special local taxes levied by school districts, (5) bonds issued by school districts or by counties.

The county is the unit through which all school taxes are collected, to which all levies must be certified on or before October 10 in each year, and through which all school funds are distributed to the separate districts.

The annual county tax or, as it is sometimes called, the local 1-mill tax, is required by state law, and the proceeds from it are "credited to the school district in which the property taxed is situated."<sup>2</sup> In 1915 the proceeds of this tax amounted to a total of \$1,492,492.65.<sup>3</sup>

A state tax of 3 mills upon all moneys<sup>a</sup> and credits<sup>a</sup> is directed by law.<sup>4</sup> The proceeds of this tax are divided as follows: one

<sup>1</sup> *Nineteenth Biennial Rept. Minn. Dept. of Educ., 1915-16* p. 18-19 Table 7.

<sup>2</sup> *Gen. Statutes of Minn., 1913* sec. 2916 p. 648.

<sup>3</sup> *Rept. Minn. State Auditor, 1915-16* p. 561.

<sup>4</sup> *Gen. Statutes of Minn., 1913* sec. 2328 p. 525.

<sup>a</sup> "Moneys and Credits" as used here are defined as follows:

"'Moneys' or 'money' shall mean gold and silver coin, treasury notes, bank notes, and other forms of currency in common use, and every deposit which any person owning the same, or holding in trust and residing in this state, is entitled to withdraw in money on demand" (See *Revised Laws of Minn., 1905* chap. 2 sec. 798 p. 141.) "'Credits' shall mean and include every claim and demand for money or other valuable thing, and every annuity or sum of money receivable at stated periods, due or become due and all claims and demands secured by deed or mortgage, due or to become due, and all shares of stock in corporations the property of which is not assessed or taxed in this state." (See *Gen. Laws of Minn., 1917* chap. 130 sec. 1 p. 181.)

sixth to the revenue fund of Minnesota, one sixth to the county fund, one third to the village, city, or town, and one third to the school district in which the property is assessed.<sup>5</sup> In 1915 the proceeds of this tax which were apportioned to school districts amounted to \$213,082.88.<sup>6</sup>

The proceeds from the sale of all estrays are payable to the county school fund.<sup>7</sup> The same fund is further increased from certain fines and forfeitures for violation of laws bearing upon the following matters: (1) sale of liquor,<sup>8</sup> (2) shipment of liquor,<sup>9</sup> (3) railroad crossings,<sup>10</sup> (4) practice of osteopathy,<sup>11</sup> (5) practice of dentistry,<sup>12</sup> (6) practice of optometry,<sup>13</sup> (7) provision of fire escapes,<sup>14</sup> (8) weights and measures,<sup>15</sup> (9) usury,<sup>16</sup> (10) injury to the United States beacons or buoys.<sup>17</sup>

Besides those fines and forfeitures which are added to the state and county school funds, certain others go, in whole or in part, to the school district in which they are collected. These are provided for by the laws concerning (1) delinquent taxes,<sup>18</sup> (2) breaches of the compulsory school attendance law,<sup>19</sup> (3) the sale of cigarettes,<sup>20</sup> and (4) the registration of burials.<sup>21</sup> The county or district may also provide that all fees for liquor licenses be added to the school fund.<sup>22</sup>

Special local school taxes are levied by all districts, common, independent, and special. In *common districts* the levy is voted by the electors at the annual school meeting,<sup>23</sup> but if they fail

<sup>5</sup> *Gen. Statutes of Minn., 1913* sec. 2328 p. 525.

<sup>6</sup> *Rept. Minn. State Auditor, 1915-16* p. 553.

<sup>7</sup> *Gen. Statutes of Minn., 1913* sec. 6040 p. 1315.

<sup>8</sup> *Ibid.* sec. 3173 p. 697.

<sup>9</sup> *Revised Statutes of Minn., 1913* sec. 3174 p. 697.

<sup>10</sup> *Ibid.* sec. 4406 p. 982.

<sup>11</sup> *Ibid.* sec. 4994 p. 1096.

<sup>12</sup> *Ibid.* sec. 5021 p. 1101.

<sup>13</sup> *Ibid.* sec. 5028 p. 1102.

<sup>14</sup> *Ibid.* sec. 5112 p. 1117.

<sup>15</sup> *Ibid.* sec. 5804 p. 1287.

<sup>16</sup> *Ibid.* sec. 5806 p. 1288.

<sup>17</sup> *Ibid.* sec. 8930 p. 1967.

<sup>18</sup> *Ibid.* sec. 2075 p. 442.

<sup>19</sup> *Ibid.* sec. 2983 p. 660 and sec. 2989 p. 661.

<sup>20</sup> *Ibid.* sec. 3211 p. 704.

<sup>21</sup> *Ibid.* sec. 6278 p. 1363.

<sup>22</sup> *Ibid.* sec. 2897.

<sup>23</sup> *Ibid.* sec. 2716 p. 613.

to make a levy sufficient to provide funds for the support of the school for the length of term agreed upon, the district school board is directed to levy a tax sufficient for that purpose.<sup>24</sup> Common districts are not permitted to levy more than 15 mills on the dollar for the support of schools unless they maintain a graded or high school, when the levy can not exceed 25 mills.<sup>25</sup> For the purpose of purchasing school sites or for the erection and equipment of schoolhouses, a common district can not levy more than 10 mills unless 10 mills will not produce \$600, in which case the levy must not exceed 25 mills on the dollar nor produce more than \$600.<sup>26</sup> In common districts having less than ten voters the district school tax shall not exceed \$400.<sup>27</sup> In *independent districts* the school board determines the rate of the tax levies, and the length of the school year,<sup>28</sup> which must be between five and ten months in any district.<sup>29</sup> The only limitation provided by law as to the amount of taxation is that no tax in excess of 8 mills on the dollar shall be levied for the purpose of school sites and the erection of schoolhouses.<sup>30</sup> In "*special districts* such amounts may be levied as may be allowed by special law at the same time when the Revised Laws [of 1913] took effect."<sup>31</sup> In *territory not included within any school district*, the county board of education makes a "special unorganized school levy" which is in lieu of a special district levy.<sup>32</sup> The levying of this tax is regulated by the provisions concerning the school taxation in a common-school district.<sup>33</sup>

The regulations governing the issue of local school bonds provide that any school district may, by a two-thirds vote at a regular or special election, direct the school board to issue bonds payable within fifteen years and bearing not more than 7 per

<sup>24</sup> *Ibid.* sec. 2756 p. 622.

<sup>25</sup> *Ibid.* sec. 2917 p. 648.

<sup>26</sup> *Ibid.*

<sup>27</sup> *Ibid.*

<sup>28</sup> Opinion of Attorney-General Young, June, 1906. Quoted from *Laws of Minn. Relating to the Public School System, 1915* p. 59.

<sup>29</sup> *Ibid.* sec. 147 p. 53.

<sup>30</sup> *Revised Statutes of Minn., 1913* sec. 2917 p. 648.

<sup>31</sup> *Ibid.*

<sup>32</sup> *Gen. Statutes of Minn., 1913* sec. 2781 p. 626.

<sup>33</sup> *Ibid.* sec. 2783 p. 627.

cent interest, for the purpose of "purchasing sites for school-houses and for defraying the expense incurred and to be incurred in building, remodeling, repairing, and furnishing schoolhouses, and installing heating and ventilating and plumbing plants in same, and equipping the same with libraries, apparatus and other school furniture."<sup>34</sup> The constitution provides that the principal of the state trust funds may be invested in such bonds.<sup>b</sup>

#### DISBURSEMENT OF LOCAL SCHOOL FUNDS

The disbursement of local school funds is much simpler than that of state funds. The district is the recognized unit, and no attempt is made to equalize either school opportunities or burdens. The proceeds of the county 1-mill tax,<sup>35</sup> and of the tax on moneys and credits,<sup>36</sup> as well as those of special local taxes, are credited to the district containing the property taxed, so no one of them in any way serves to aid in the equalization of school burdens or school opportunities. "The amounts collected from liquor licenses, fines, estrays, and other sources" are apportioned, together with the amount received from the Current School Fund, by the county auditor upon the same basis as the state apportionment,<sup>c</sup> and "such money shall be used only for the payment of teachers' wages."<sup>37</sup>

With regard to the revenues derived from liquor licenses, the law provides that no district shall receive any part of them unless all sums paid for such licenses in such district are apportioned to the county school fund.<sup>38</sup>

<sup>34</sup> *Gen. Statutes of Minn., 1913* sec. 1855 p. 383.

<sup>35</sup> *Ibid.* sec. 2915 p. 648.

<sup>36</sup> *Ibid.* sec. 2328 p. 525.

<sup>37</sup> *Ibid.* sec. 2897 p. 646.

<sup>38</sup> *Ibid.*

<sup>b</sup> See provisions concerning such investment, p. 17.

<sup>c</sup> See treatment of the apportionment of the Current School Fund in Chap. II.

# CHAPTER IV

## HISTORY OF THE PERMANENT PUBLIC- SCHOOL FUNDS IN MINNESOTA

The history of Minnesota's permanent school funds is of particular interest since Minnesota ranks second in the United States in the amount of the principal of its permanent public-school funds, acreage and value of unsold school lands, and the total value of permanent school funds. It is surpassed in each of these particulars by Texas alone.<sup>1</sup>

Minnesota has two permanent public-school funds, the Permanent School Fund and one half the Swamp Land Fund. The entire income from the Permanent School Fund<sup>2</sup> and one half the income from the Swamp Land Fund are devoted to the support of the public schools of the state.<sup>3</sup> It is frequently very difficult to secure accurate and reliable data on school revenues. The figures concerning the Minnesota Permanent School Fund given in the report of the United States Commissioner of Education for 1914 illustrate the unreliability of much current data. This report gives the following statistics for Minnesota for that year.

Permanent school funds . . . . .	\$ 24,668,248 <sup>4</sup>
Acres of unsold school land, 2,555,000 . . . . .	
Value of unsold school land . . . . .	180,000,000
<hr/>	
Total value of permanent funds and school lands . . .	\$204,668,248

The amount given in this report for the Permanent School Fund is the principal of the fund of that name only, and entirely ignores the Swamp Land Fund of \$4,292,789.37,<sup>5</sup> one half of which is also a permanent school fund. On the other hand, the number of acres of unsold school land given includes both the 735,648.79<sup>6</sup> acres of school land and the whole of the 1,459,834.23<sup>7</sup>

<sup>1</sup> *Rept. U. S. Commissioner of Educ., 1916* 2:36 Table 17.

<sup>2</sup> *Minn. Constitution* art. 8 sec. 2.

<sup>3</sup> *Ibid.*

<sup>4</sup> *Rept. U. S. Commissioner of Educ., 1916* 2:36 Table 17.

<sup>5</sup> *Rept. Minn. State Auditor, 1913-14* p. v.

<sup>6</sup> *Ibid.* p. 3.

<sup>7</sup> *Ibid.*

acres of unsold swamp land, although not more than one half of the latter can be said to belong to the permanent school funds.

It is evident, then, that the total of the permanent school funds of Minnesota for 1914 amounted to \$26,814,647.68 instead of \$24,668,248 as given by the federal report. The amount of unsold land belonging to the school funds in that year was only 1,465,565.9 acres instead of 2,555,000 acres as reported by the commissioner of education. No basis is given in the report for the estimated value of \$180,000,000 or average of \$79.82 per acre put upon the 2,555,000 acres of unsold school and swamp land. This estimate, however, probably is based upon an attempt to include the surface value together with the timber and mineral values of these lands. If so, it is probably not excessive.

The following table shows the true condition of these funds in 1916.

TABLE X  
PERMANENT SCHOOL FUNDS IN MINNESOTA—1916

Permanent School Fund.....	\$26,411,796.46†
One half of Swamp Land Fund.....	\$2,664,162.67‡
Unsold school land.....(acres)	696,086.73††
One half of unsold swamp land.....(acres)	689,132.62††
Estimated value of unsold school and swamp land belonging to permanent school funds.....	\$110,568,208.51*

#### ORIGIN OF THE PERMANENT FUNDS

The permanent school funds of Minnesota are derived from the school land granted the state by the federal government at the time of its admission to the Union, and from the swamp lands granted in 1880. In 1849, sections 16 and 36 were reserved for the use of schools by the organic act of the states which provided that "when the lands in said territory shall be surveyed, under the direction of the government of the United States, preparatory to bringing the same into market, sections sixteen and thirty-six in each township in said territory shall be, and the same are hereby reserved for the purpose of being applied to schools in said territory, and in the states and territories

† *Report of State Auditor, 1915-16*, p. v.

‡ *Ibid.*, p. vi.

†† *Ibid.*, p. 3.

\* Estimated on the basis of the average valuation of \$79.82 per acre used in Rept. of the U. S. Commissioner of Educ., 1916 2:36.

hereafter to be erected out of same."<sup>8</sup> In 1857, the Enabling Act of Minnesota provided that "the sections numbered sixteen and thirty-six in every township of public land in said state, and where either of said sections, or any part thereof, has been sold or otherwise disposed of, other lands, equivalent thereto and as contiguous as may be, shall be granted to said State for the use of schools."<sup>9</sup> The land thus granted to the state amounted to 2,969,990 acres,<sup>10</sup> or five and five-tenths (.055) per cent of the area of the state. The Constitution of 1857, which became effective upon the admission of the state, accepted this grant and provided that "the income arising from the lease or sale of said school land shall be distributed to the different townships throughout the state, in proportion to the number of scholars in each township between the ages of five and twenty-one years, and shall be faithfully applied to the specific objects of the original grants or appropriations."

The Swamp Land Fund is derived from lands received under the federal grant of 1860. This act extended to Minnesota the benefit of an act of 1850 which had granted to certain other states "all swamp and overflowed lands, made unfit thereby for cultivation, and remaining unsold."<sup>11</sup> The report of the state auditor for 1913-14 gives the following statement of lands received under this act:

	ACRES	ACRES
Selected by the U. S. surveyor-general as inuring to the State under the Swamp Land Grant .....	5,890,199.20	.....
Patented to the State by the U. S. ....		4,709,038.18
Approved to the State by the U. S. but not as yet patented ..		84,013.67
Swamp land claimed by State, claim unadjusted or cancelled by U. S. or relinquished by the State in favor of settlers .....		1,097,147.35
	5,890,199.20	5,890,199.20 <sup>12</sup>

The constitutional amendment of 1881 provided that the principal of the Swamp Land Fund should be preserved undiminished and inviolate, and that the income should be divided and one half appropriated to the Common School Fund and one half to the educational and charitable institutions of

<sup>8</sup> Organic Act of Minn., *Gen. Statutes of Minn., 1866* pp. 14-21.

<sup>9</sup> Enabling Act of Minnesota., F. N. Thorpe, *Federal and State Constitutions* 4: 1989.

<sup>10</sup> Table of Land Grants, *Report U. S. Commissioner of Educ., 1892-93* 2: 1283.

<sup>11</sup> Tables. *State Grants of Public Lands, Gen. Land Office*, March 12, 1896 p. 9. (Quoted here from F. H. Swift, *Permanent Common School Funds* p. 62.)

<sup>12</sup> *Rept. Minn. State Auditor, 1913-14* p. 17.

the state.<sup>13</sup> No action was taken in the matter, however, until 1907 when a statute was passed directing that the provision of the amendment be carried out.<sup>14</sup> Accordingly, since 1907 one half of the Swamp Land Fund has been a second permanent school fund, and its income has been devoted to the public schools.

#### GROWTH OF THE PERMANENT FUNDS

The capital of the Permanent School Fund and of the Swamp Land Fund may be regarded as comprised of two parts: the lands belonging to these funds and the money principal derived from the sale or lease of these lands or from other sources. No land has been received by either of these funds in addition to that coming from the grants mentioned above.

TABLE XI  
SOURCES OF THE PRINCIPAL OF THE PERMANENT  
SCHOOL FUND—1916<sup>15</sup>

SOURCE	AMOUNT	PER CENT OF WHOLE <sup>b</sup>
1. Sales of land, right of way, etc.....	\$14,876,186.10	56+
2. Sales of timber.....	7,048,788.63	26+
3. Mineral permits and leases.....	316,000.77	1+
4. Royalty on iron ore.....	3,809,231.02	14+
5. Profit on sale of bonds.....	361,589.94	1+
	\$26,411,796.46	

The principal of both of these permanent funds has increased steadily through additions from five different sources. The Constitution of 1858 provided that all moneys received (1) from the sale, and (2) from the lease of school lands should be added to the Permanent School Fund.<sup>16</sup> In the same way the proceeds from swamp lands are added to the Swamp Land Fund.<sup>17</sup> A considerable part of the lands belonging to these funds is valuable for timber or for mineral deposits. (3) Receipts from the sale

<sup>13</sup> *Minn. Constitution* art. 8 sec. 2.

<sup>14</sup> *Gen. Laws of Minnesota, 1907* chap. 385.

<sup>15</sup> *Rept. Minn. State Auditor, 1915-16* p. vi.

<sup>16</sup> *Minn. Constitution* art. 8 sec. 2.

<sup>17</sup> *Ibid.*

<sup>b</sup> Computed from data in the table.



of timber and (4) from the lease of mineral rights are added to the funds. (5) A fifth source of increase is found in the wise investment of the moneys of the fund.

An analysis of the principal of the Permanent School Fund in 1916 will show the relative importance of each of these contributing sources.

The following table shows the growth of the Permanent School Fund since 1862.

TABLE XII  
GROWTH OF THE PERMANENT SCHOOL FUND—1862-1916

YEAR	PRINCIPAL <sup>13</sup>	ACRES OF UNSOLD SCHOOL LAND
1858.....		2,969,990 <sup>c</sup>
1862.....	\$ 242,531.00	2,931,742 <sup>c</sup>
1870.....	2,426,240.00	2,589,085 <sup>c</sup>
1880.....	4,449,725.00	2,285,113 <sup>c</sup>
1890.....	9,241,119.00	1,607,851 <sup>c</sup>
1900.....	12,546,529.00	1,271,460 <sup>c</sup>
1916.....	26,411,796.46	649,129 <sup>19</sup>

The Swamp Land Fund has been increased from similar sources with the exception that it has received no moneys from the sale of bonds. The percentage of the whole furnished by each source appears in the following analysis.

TABLE XIII  
SOURCES OF THE SWAMP LAND FUND—1916<sup>20</sup>

SOURCE	AMOUNT	PER CENT <sup>d</sup>
Sales of timber, right of way, etc.....	\$3,298,432.18	61+
Sale of timber.....	1,496,934.91	28+
Mineral permits and leases.....	79,737.00	1+
Royalty on iron ore.....	453,221.26	8+
	\$5,328,325.35	

<sup>13</sup> *Rept. Minn. Dept. of Educ., 1915-16* p. ii.

<sup>19</sup> *Rept. Minn. State Auditor, 1915-16* p. v.

<sup>20</sup> *Ibid.* p. vi.

<sup>c</sup> Only approximately correct. Computed by subtracting acres sold each year, (see note 10) without corrections for lands forfeited and resold. From table of land grants, *Rept. U. S. Commissioner of Educ., 1892-93* 2:1283.

<sup>d</sup> Computed from data given in the table.

One half of the income from the principal is apportioned to the public schools.

The following table shows the growth of the Swamp Land Fund since 1908, the year after it became one of the permanent school funds:

TABLE XIV  
GROWTH OF SWAMP LAND FUND

YEAR	TOTAL SWAMP LAND FUND	ONE HALF OF SWAMP LAND FUND <sup>d</sup>
1908.....	\$1,243,272.35 <sup>21</sup>	\$ 621,636.17
1910.....	1,581,255.20 <sup>22</sup>	790,627.60
1914.....	4,292,789.37 <sup>23</sup>	2,146,394.68
1916.....	5,328,325.35 <sup>24</sup>	2,164,162.67

#### MANAGEMENT OF PERMANENT FUNDS

The first message of the governor of Minnesota included a plea that the financial supervision of the public lands be vested in a separate central department at the seat of government.<sup>25</sup> This very wise advice was ignored and has continued to be ignored to this day. State officials and others have continued to urge the establishment of such a department, but to no avail.<sup>26</sup> Bills establishing a separate state land department were introduced in the legislative sessions of 1909 and 1911, but both were defeated.<sup>27</sup>

In 1861 an act for the appraisal, sale, and lease of school lands was passed. It created a board of commissioners of school lands, consisting of the governor, attorney-general, and superintendent of public instruction.<sup>28</sup> Since the duties of this board, however, conflicted with those of the board of commissioners of public lands, both boards were abolished in 1862, and the auditor was made ex officio state land commissioner with an

<sup>21</sup> *Rept. Minn. State Auditor, 1915-16* p. ix.

<sup>22</sup> *Rept. Minn. Supt. of Public Instr., 1909-10* p. 249.

<sup>23</sup> *Rept. Minn. State Auditor, 1913-14* p. v.

<sup>24</sup> *Ibid., 1915-16* p. vi.

<sup>25</sup> *Annual Message of Gov. Ramsey, Minn. Exec. Documents, 1860* p. 22.

<sup>26</sup> *Rept. Minn. State Auditor, 1911-12* p. xxxvi.

<sup>27</sup> *Ibid.*

<sup>28</sup> *Gen. Laws of Minn., 1861* chap. 14.

<sup>d</sup> Computed from data given in the table.

annual salary of \$300 for the duties of that office.<sup>29</sup> When the term "Minnesota state land commissioner" is used it should be borne in mind that it does not refer to a state official devoting his whole time to the care of state lands, but merely to the state auditor. Later enactments do not use the term "land commissioner," and the general supervision of all state lands remains in the hands of the state auditor.

The policy of governing the sale of school lands has not varied greatly since the adoption of the first constitution.<sup>30</sup> The Statutes of 1861 made \$7 the minimum price for school lands,<sup>31</sup> but this was reduced in 1862 to \$5,<sup>32</sup> which it is at the present time. At no time, however, have lands been sold without having been appraised.

At the close of 1916, there had been sold 2,282,225.33 acres of school land, for which the state received \$14,691,049.78.<sup>32</sup>

#### SCHOOL LAND LOSSES

Minnesota has suffered serious losses through frauds connected with the management of the state lands. These losses have been for the most part in the form of timber. Only such part of them as has been proved can be computed, and the real total is undoubtedly much larger than any records show. In 1893, a joint resolution of the state legislature appointed a committee to investigate frauds charged in the sale of timber from state lands.<sup>33</sup> When this committee reported to the governor in 1894, it had already succeeded in collecting \$30,526.29, had suits pending to the amount of \$157,284.28, and was preparing suits for \$205,076.44, for timber illegally taken from state lands.<sup>34</sup> It reported that it had not been able to cover all cases nor all parts of the state, and added:

This committee believes that the school fund of the state has been robbed of hundreds of thousands of dollars worth of valuable timber, for which no return has ever been made to the state; that thousands

<sup>29</sup> *Gen. Laws of Minn., 1862* chap. 62 sec. 1 p. 122.

<sup>30</sup> *Ibid., 1861* chap. 14.

<sup>31</sup> *Ibid., 1862* chap. 12 sec. 1 p. 46.

<sup>32</sup> *Rept. Minn. State Auditor, 1915-16* p. 7.

<sup>33</sup> *Rept. Pine Land Investigating Committee* p. 2.

<sup>34</sup> *Ibid.* p. 78.

<sup>e</sup> See p. 13.

of acres of valuable farming lands have been depreciated in value by reason of the removal of such timber, and rendered practically unsalable, and that, in the aggregate, the direct loss to the school fund of the state, by these reprehensible and unpardonable practices will run into the hundreds of thousands of dollars.<sup>35</sup>

In spite, however, of the work of this committee and of the recognition of its recommendations by the passage of a better timber law in 1895,<sup>36</sup> frauds in the sale of lumber did not entirely cease. In his report for 1915-16, the state auditor says:

Palpable carelessness and frauds in numerous instances have been perpetrated by scalers appointed by the surveyor-general. . . . Short scales have been fully as prevalent in cases where the scale has been made by a scaler of the State Auditor. Carelessness and frauds have been extremely common. . . . The net result of the activities of the timber investigation during the year extending from October 15, 1915 to October 15, 1916, without considering trespass, penalties, and stump scales not yet reported, have been as follows:

Trespass.....	\$12,526.23
Stump scale and interest penalties.....	62,780.06
Interest penalties for extension of permits and on overdue drafts.....	19,609.10
	<hr/>
	\$94,915.39

Commenting upon these facts, the auditor says:

Prosecutions under the statutes now upon the books, and above referred to, have been found practically impossible by the attorney-general. It is imperative that the criminal provisions of these statutes be strengthened.<sup>37</sup>

For some years uneasiness has been felt concerning the statutes of that part of the swamp land now under dispute with the federal government. The report of the state auditor for 1915-16 says that "1,097,147.35 acres of land [swamp land] are, as to title, in dispute between the federal government and the State of Minnesota."<sup>38</sup> Since 1913 no swamp land has been patented to Minnesota by the general land office, charges having been filed with the Department of the Interior accusing Minnesota of having been unfaithful to her trust of swamp lands

<sup>35</sup> *Rept. Pine Land Investigating Committee* p. 2.

<sup>36</sup> *Gen. Laws of Minn., 1895* chap. 160 sec. 10 p. 353.

<sup>37</sup> *Rept. Minn. State Auditor, 1915-16* p. xxviii.

<sup>38</sup> *Ibid.*

since the income from them was, in 1881, diverted from reclamation and devoted to public schools and state charitable institutions. The same report says:

The time is at hand when the government, as well as the state, will be best served by arriving at an agreement as to the status of all swamp lands within the state of Minnesota. It should be done with expedition, in order that all of these lands belonging to all of the people may be administered wisely either by the government or by the state of Minnesota, as title may appear.<sup>39</sup>

Because of these unsatisfactory conditions, the last legislature constituted the governor, attorney-general, and auditor as members of the State Land Commission with full powers to consider and propose to the legislature terms of settlement of all claims and differences or controversies that now exist or may hereafter arise between the state and the United States over lands granted to the State of Minnesota under any act of congress. They have, also, the power to accept patents or to reconvey state lands to the United States.<sup>40</sup>

In view of the unsatisfactory condition of the Swamp Land Grant and the great losses which are known to have occurred in the management of the various lands, it seems evident that some better provision for the management of the large land interests of the state is necessary. The experience of many states of the Union indicates that the appointment of a single officer charged with the administration of state lands and trust funds is probably the only means of safeguarding the interests of the state, particularly in a state having lands and funds of so much value as those in Minnesota.<sup>†</sup>

The investment of the permanent school funds is governed by constitutional provisions, and its history is that of a widening range of lawful investments for the rapidly growing funds. The present lawful investments have been provided for in the following order:

- 1858    1. Bonds of the United States  
          2. Bonds of the State of Minnesota  
          3. Bonds of any state designated by law

<sup>39</sup> *Ibid.* p. xx.

<sup>40</sup> *Session Laws of Minn.*, 1917 chap. 324 p. 458.

<sup>†</sup> For a discussion of this subject, see F. H. Swift, *Public Permanent Common School Funds* p. 119.

- 1885 4. Bonds of counties and school districts of the state for the erection of public buildings  
 1896 5. Bonds of counties, districts, cities, towns, and villages of the state

A statement of the present investments of both of the permanent funds will be found in Chapter I.

Since 1863 the investment of state funds has been in the hands of the State Board of Investment. In 1861 the state treasurer was made receiver of the moneys of the school fund, and their investment was placed in the hands of the Board of Commissioners of School Lands.<sup>41</sup> In 1863 the Board of Investment was created, consisting of the governor, auditor, and treasurer.<sup>42</sup> In 1873 the membership of the board was increased to five by the addition of the chief justice of the supreme court, and the president of the Board of Regents.<sup>43</sup> In 1913, the attorney-general was made a member of this board instead of the chief justice of the supreme court.<sup>44</sup>

The Constitution of 1858 provided that the principal of the Permanent School Fund should be invested in bonds of the United States, of Minnesota, or of any other state designated by law. The session laws of 1861 repeated this provision, adding that the bonds must be purchased at the current value in the city of New York.<sup>45</sup> In 1873 an act was passed permitting investments in (1) Minnesota bonds, (2) United States bonds at 6 per cent, and (3) 4 per cent bonds of New York, Pennsylvania, Ohio, Illinois, Michigan, Wisconsin, Iowa, and Missouri.<sup>46</sup> The same law specifically excluded all bonds issued to aid in the construction of any railway.<sup>47</sup>

In 1885 the school fund had increased to more than seven million dollars, and a new type of investment was seriously needed. In 1875 the state auditor wrote:

If some other investment is not authorized, we shall very soon be obliged to invest in United States five per cent bonds which at present

<sup>41</sup> *Rept. Pine Land Investigating Committee* p. 2.

<sup>42</sup> *Gen. Laws of Minn., 1863* chap. 12 sec. 7 p. 49.

<sup>43</sup> *Ibid.*, 1873 chap. 32 sec. 1 p. 150.

<sup>44</sup> *Ibid.*, 1913 chap. 515 sec. 1 p. 1144.

<sup>45</sup> *Ibid.*, 1861 chap. 14 sec. 43 p. 94.

<sup>46</sup> *Ibid.*, 1873 chap. 33 p. 150.

<sup>47</sup> *Ibid.*

rates of premium would reduce the interest to about four and one-quarter per cent. . . . There are hundreds of thousands of dollars of city, county, school and district bonds many of which would not be exchanged for United States bonds, issued within our own State, now outstanding at rates of interest varying from seven to twelve per cent, and many, if not most of them, have been sold to eastern capitalists at rates considerably below par. The discount and interest exceeding seven per cent on all of these bonds now existing in this state must amount to an exceedingly large sum, all of which might have been saved to our taxpayers of the State, and a seven per cent loan secured to the state funds if the money had been invested in local bonds.<sup>48</sup>

These conditions did not change, and in 1895 a constitutional amendment was adopted permitting the school funds to be loaned at 5 per-cent interest to the counties and school districts of the state for the erection of county or school buildings. The amount of such loans was limited to 3 per cent of the assessed valuation of the county or district.<sup>49</sup> Two provisions of this bill proved unsatisfactory. The limit put upon the amount of the loans ignored other debts of the county or district, although the total debt secured by the property of a corporation is very important in determining the safety of the bonds. The limit put upon the use of the money seemed unnecessary. In spite, however, of these defects the system proved popular. In 1896 the state auditor reported that a total of \$1,801,117.41 had been lent to 2,105 school districts and 15 counties.<sup>50</sup>

Local demand for funds continued, and in 1896 a further amendment was adopted which permitted the permanent school funds to be invested in bonds of counties, districts, cities, towns, and villages of the state, bearing 3 per-cent interest and running five to twenty years.<sup>51</sup> The amount loaned must not increase the entire bonded debt to more than 7 per cent of the assessed valuation of the unit issuing the bonds.<sup>52</sup>

In 1897 it was proposed to increase the maximum bonded indebtedness to 15 per cent of the assessed valuation of the property of the unit issuing the bonds. An amendment to this effect was submitted to the people and rejected. In 1901 the

<sup>48</sup> *Rept. Minn. State Auditor, 1875* p. 33.

<sup>49</sup> *F. N. Thorpe, Federal and State Constitutions* 4:2010.

<sup>50</sup> *Rept. Minn. State Auditor, 1895-6* p. 15.

<sup>51</sup> *Gen. Laws of Minn., 1897* p. vii.

<sup>52</sup> *Ibid.*

attempt to secure this amendment was renewed. It was submitted to the vote of the people and rejected by them in 1901 and 1903. In 1905 it was ratified.<sup>53</sup> In 1913 it was found possible to secure investment for the funds at 4 per cent instead of at 3 as the law permitted. Without attempting to amend the constitution, the legislature passed a law raising the rate of interest on loans made on municipal<sup>e</sup> bonds to 4 per cent.<sup>54</sup>

The importance of these later forms of investment appears from the statement of the present investment of the permanent funds given in Chapter I, and from the fact, also discussed in Chapter I, that it has been found advisable to legalize the sale of the bonds of other states in which the funds had been invested so that the moneys may be reinvested within the state at a higher rate of interest.<sup>55</sup>

The laws of Minnesota have always provided a title for the annual school revenue derived from the permanent funds. From 1861 to 1915 this income was known as the Current School Fund, since that time, as the Endowment Fund. The Statutes of 1861 provided that all moneys received as interest on the Permanent Fund or rents on leased lands should constitute the Current School Fund.<sup>56</sup> Moneys derived from the rent of lands were, however, added to the principal of the Permanent School Fund in accordance with constitutional provisions.<sup>57</sup> Later provisions added the proceeds of the state 1-mill school tax to the income from the permanent funds and designated the whole as the Current School Fund.<sup>58</sup> In 1915 the income from the permanent funds was specifically designated by law as the Endowment Fund.<sup>59</sup> All of these changes in title, however, have been ignored by the state auditor.<sup>h</sup> In

<sup>53</sup> *Minn. Constitution* art. 8 sec. 6.

<sup>54</sup> *Gen. Laws of Minn., 1862* chap. 2 sec. 43 p. 30.

<sup>55</sup> *Session Laws of Minn., 1917* chap. 464 p. 765.

<sup>56</sup> *Gen. Laws of Minn., 1861* sec. 42 p. 93.

<sup>57</sup> *Minn. Constitution* art. 8 sec. 2.

<sup>58</sup> *Gen. Statutes of Minn., 1913* sec. 2915 p. 648.

<sup>59</sup> *Session Laws of Minn., 1915* chap. 296 sec. 1 p. 416.

<sup>e</sup> "Municipal" is used to designate all local bonds upon which loans of state moneys may be made.

<sup>h</sup> Verified by information in response to personal inquiry by the author, May 14, 1918.



all of his reports the income from the permanent school funds is referred to as the General School Fund.<sup>60</sup>

Since 1864, the income from the permanent school funds has been apportioned to the public schools. Until 1880 the amount so derived was reported as a separate fund. Since 1880 the income from the permanent funds has been combined with the proceeds of the 1-mill tax and disbursed as the Current School Fund. For that reason there is no available statement of the amount actually received from the permanent funds. The amounts given in Table XV have been computed by selecting from the auditor's report of the General School Fund<sup>60</sup> those items which have been derived from the income of the permanent school funds. This method was followed on the advice of the auditor's office. The data in this regard given in federal reports are inaccurate and badly confused.

#### APPORTIONMENT OF THE ENDOWMENT FUND

The basis of the apportionment and the requirements for participation in school revenues are of great importance in determining both the usefulness and influence of those revenues. It has been pointed out in Chapter II that the present basis of apportionment of the Endowment Fund is that of school enrollment. This is a basis which can have only a very small effect upon the development of the schools. In all, only two bases of apportionment have ever been applied to the Endowment Fund. These are (1) school population and (2) school enrollment. This first holds out no incentive whatever for the improvement of the schools. The second encourages a community to secure the enrollment of all pupils and to keep them in school long enough to entitle them to be classed as scholars.

The Constitution of 1858 provided that "the income arising from the lease or sale of said school lands shall be distributed to the different townships throughout the state in proportion to the number of scholars in each township between the ages of five and twenty-one years." All later provisions relating to apportionment are concerned with definitions of the term scholar as used in this section, or with prescribed requirements for participation in the moneys.

<sup>60</sup> *Rept. Minn. State Auditor, 1915-16* p. 83.

TABLE XV  
INCOME FROM THE PERMANENT SCHOOL FUNDS—1864-1917

YEAR	INCOME FROM PERMANENT SCHOOL FUND	INCOME FROM SWAMP-LAND FUND	TOTAL INCOME FROM PERMANENT SCHOOL FUND <sup>1</sup>	PER CENT OF TOTAL SCHOOL REVENUES DERIVED FROM PERMANENT SCHOOL FUNDS <sup>8</sup>
1864 <sup>4</sup> . . . . .	\$70,016.45 <sup>61</sup>			
1865 . . . . .	55,474.10 <sup>62</sup>			
1870 . . . . .	176,806.35 <sup>63</sup>			23+ <sup>66</sup>
1875 . . . . .	191,578.50 <sup>64</sup>			10+ <sup>67</sup>
1880 . . . . .	250,485.90 <sup>65</sup>			15+ <sup>68</sup>
1885 . . . . .	282,505.71 <sup>69</sup>			11+ <sup>70</sup>
1890 . . . . .	375,642.07 <sup>71</sup>			08+ <sup>72</sup>
1895 . . . . .	547,272.98 <sup>73</sup>			11+ <sup>74</sup>
1900 . . . . .	658,256.70 <sup>75</sup>			14+ <sup>77</sup>
1905 . . . . .	599,143.11 <sup>76</sup>			06+ <sup>78</sup>
1907 . . . . .	678,577.61 <sup>79</sup>	\$62,144.72 <sup>79</sup>	740,722.33	06+ <sup>80</sup>
1908 . . . . .	686,432.55 <sup>81</sup>	18,637.16 <sup>81</sup>	705,069.71	05+ <sup>82</sup>
1909 <sup>1</sup> . . . . .	64,807.49 <sup>83</sup>	22,356.62 <sup>83</sup>	87,164.11	07+ <sup>84</sup>
1910 . . . . .	765,046.06 <sup>85</sup>	26,368.26 <sup>85</sup>	791,414.32	05+ <sup>86</sup>
1911 . . . . .	781,878.40 <sup>87</sup>	30,288.11 <sup>87</sup>	812,166.51	07+ <sup>88</sup>
1912 . . . . .	850,287.59 <sup>88</sup>	47,860.40 <sup>88</sup>	898,147.99	06+ <sup>89</sup>
1913 . . . . .	888,233.31 <sup>90</sup>	62,875.22 <sup>90</sup>	951,108.53	06+ <sup>91</sup>
1914 . . . . .	956,256.90 <sup>92</sup>	72,625.25 <sup>92</sup>	1,028,882.25	06+ <sup>93</sup>
1915 . . . . .	882,109.30 <sup>94</sup>	69,412.88 <sup>94</sup>	951,522.18	05+ <sup>95</sup>
1916 . . . . .	963,878.21 <sup>96</sup>	71,694.48 <sup>98</sup>	1,035,572.69	06+ <sup>97</sup>

<sup>61</sup> *Rept. Minn. Dept. of Educ., 1915-16* p. 12 Table 3.

<sup>62</sup> *Ibid.*

<sup>63</sup> *Ibid.*

<sup>64</sup> *Ibid.*

<sup>65</sup> *Ibid.*

<sup>66</sup> *Rept. Minn. Supt. of Public Instr., 1870* p. 505.

<sup>67</sup> *Ibid.* 1875 p. 553.

<sup>68</sup> *Bienn. Rept. Minn. State Auditor, 1881-82* p. 21.

<sup>69</sup> *Ibid.* 1885-86 p. 20.

<sup>70</sup> *Rept. U. S. Commissioner of Educ., 1885-86* p. 10.

<sup>71</sup> *Bienn. Rept. Minn. State Auditor, 1889-90* p. 31.

<sup>72</sup> *Rept. U. S. Commissioner of Educ., 1890-91* 1:20.

<sup>73</sup> *Bienn. Rept. Minn. State Auditor, 1895-96* p. 77.

<sup>74</sup> *Rept. U. S. Commissioner of Educ., 1895-96* 1:1xx.

<sup>75</sup> *Bienn. Rept. Minn. State Auditor, 1899-1900* p. 42.

<sup>76</sup> *Ibid.* 1905-06 p. 65.

<sup>77</sup> *Rept. Minn. Supt. Public Instr., 1901-02.*

<sup>78</sup> *Rept. U. S. Commissioner of Educ., 1905* 1:410.

The Statutes of 1862 provided for apportionment on the basis of the number of persons between five and twenty-one in the several counties of the state, making the apportionment on the simple basis of school population.<sup>99</sup>

In 1887 the basis of apportionment was changed from school population to school enrollment.<sup>100</sup> The apportionment was in proportion to the number of scholars between the ages of five and twenty-one who had been enrolled and had been in attendance forty days in the public schools that had been in session at least five months within the year.<sup>101</sup>

This basis of apportionment remains unchanged although the requirements for participation have been raised.

<sup>99</sup> *Bienn. Rept. Minn. State Auditor, 1907-08* p. 65.

<sup>100</sup> *Rept. U. S. Commissioner of Educ., 1907* 2:557.

<sup>101</sup> *Bienn. Rept. Minn. State Auditor, 1907-08* p. 72.

<sup>102</sup> *Rept. U. S. Commissioner of Educ., 1908* 2:398.

<sup>103</sup> *Bienn. Rept. Minn. State Auditor, 1909-10* p. 68.

<sup>104</sup> *Rept. U. S. Commissioner of Educ., 1909* 2:613.

<sup>105</sup> *Bienn. Rept. Minn. State Auditor, 1909-10* p. 74.

<sup>106</sup> *Rept. U. S. Commissioner of Educ., 1910* 2:678.

<sup>107</sup> *Bienn. Rept. Minn. State Auditor, 1911-12* p. 69.

<sup>108</sup> *Rept. U. S. Commissioner of Educ., 1911* 2:701.

<sup>109</sup> *Bienn. Rept. Minn. State Auditor, 1911-12* p. 76.

<sup>110</sup> *Rept. Minn. Dept. of Educ., 1913-14* p. 9.

<sup>111</sup> *Bienn. Rept. Minn. State Auditor, 1913-14* p. 71.

<sup>112</sup> *Rept. Minn. Dept. of Educ., 1913-14* p. 9.

<sup>113</sup> *Bienn. Rept. Minn. State Auditor, 1913-14* p. 78.

<sup>114</sup> *Rept. Minn. State Dept. of Educ., 1913-14* p. 9.

<sup>115</sup> *Bienn. Rept. Minn. State Auditor, 1915-16* p. 75.

<sup>116</sup> *Rept. Minn. Dept. of Educ., 1915-16* p. 9.

<sup>117</sup> *Bienn. Rept. Minn. State Auditor, 1915-16* p. 83.

<sup>118</sup> *Rept. Minn. Dept. of Educ., 1915-16* p. 9.

<sup>119</sup> *Gen. Laws of Minn., 1862* chap. 2 sec. 43 p. 30.

<sup>120</sup> *Ibid., 1887* chap. 41 sec. 1 p. 94.

<sup>121</sup> *Ibid., 1861* chap. 11 sec. 41 p. 66.

<sup>i</sup> Computed from data given in this table.

<sup>j</sup> Data from 1864 to 1880 taken from *Rept. Minn. Dept. of Educ., 1915-16* p. 12 Table 3. After 1880 the amounts given in that table include the state 1-mill tax.

<sup>k</sup> Percentages in this column are computed on the basis of total revenues exclusive of balances on hand and income from the sale of bonds. The numbered footnotes give the sources of the total revenue for that year.

<sup>l</sup> Since the report of the state superintendent shows no decrease in the Current School Fund for 1909, there is reason to suppose that the amount given here may be in error. However, since the state superintendent does not report these funds separately, it is not possible to check the report of the auditor.

## REQUIREMENTS FOR PARTICIPATION

The requirements for participation in a fund show the direction in which it influences the schools to develop. If the requirements are up to or slightly above the average conditions found in the schools, the fund may serve as an incentive for improvement of the poorer schools. There seems to have been no time when the requirements for participation in the Endowment Fund were much in advance of the average educational conditions. It has, however, been made a means for securing reports from local officials and for maintaining closer relations between the schools and the state department. The requirements for participation are of three kinds: (1) length of school term, (2) qualification of the teacher, (3) reports from teachers and officials.

For participation in the Endowment Fund, the act of 1861 required a school term of three months taught by a properly licensed teacher.<sup>102</sup> In 1887 the requirement was increased to five months.<sup>103</sup> In 1915 the required term was made six months.<sup>104</sup> This still stands, although the average length of term for the state in 1914 was eight months.

The Statutes of 1861 provided that the number of scholars should be determined from an annual local report, thus making reports to state officials an implied condition of participation.<sup>105</sup> It is to be observed, however, that in 1862<sup>106</sup> and again in 1863<sup>107</sup> the legislature passed acts extending the time for filing reports of district clerks for participation in the apportionment. In 1862 more specific requirements for reports were added. These provide for a report of school population and apportionment of funds to be made by the county auditor to the superintendent of public instruction.<sup>108</sup> A fine of \$50 for failure to report is also provided.<sup>109</sup> The county superintendent was required to report to the superintendent of public instruction:<sup>110</sup> (1) number

<sup>102</sup> *Gen. Laws of Minn.*, 1861 chap. 11 sec. 41 p. 66.

<sup>103</sup> *Ibid.*, 1887 chap. 41 sec. 1 p. 94.

<sup>104</sup> *Ibid.*, 1915 chap. 296 sec. 3 p. 416.

<sup>105</sup> *School Laws of Minn.*, 1861 p. 51.

<sup>106</sup> *Gen. Laws of Minn., Extra Session of 1862* chap. 14 p. 59.

<sup>107</sup> *Ibid.*, 1863 chap. 10 p. 44.

<sup>108</sup> *Ibid.*, 1862 chap. 1 sec. 23 p. 24.

<sup>109</sup> *Ibid.*

<sup>110</sup> *Ibid.*

of districts in his county; (2) districts which have made reports to him; (3) length of time a school has been taught in each district by an authorized teacher; (4) amount of money received from each source for use of schools; (5) amount disbursed to each district and amount on hand; (6) number of persons in each district between ages of five and twenty-one, distinguishing between males and females, and numbers that have attended school during one year, and number between fifteen and twenty-one years of age; (7) amount of money raised in district and paid for teachers' wages in addition to public money paid therefore; amount of money raised for purchasing school sites, for buildings, hiring, purchasing, repairing, insuring, and ornamenting schoolhouses and grounds since date of his report; (8) number of private schools, high schools, colleges, and universities in his county, their condition and resources and the number of teachers and pupils therein.

In 1887 a further enactment required the teacher to make a term report to the county superintendent.<sup>111</sup> The teacher's wages were to be withheld until all reports due had been filed.<sup>112</sup>

#### LAWFUL OBJECTS

The Current School Fund has always been used primarily for the payment of teachers' wages. Until 1878, the law of 1856 remained in effect. This permitted the use of the fund "for necessary repairs of the schoolhouse and for defraying the actual expenses needed for holding schools therein, provided that enough<sup>113</sup> money [was] reserved to pay the teachers' wages." Naturally, this encouraged many districts to pay as low wages as possible. In 1877, the law provided that money in the county treasury from the Current School Fund should be used only in payment of teachers' wages, including board.<sup>114</sup> The present law forbids the use of the Current School Fund for any other purpose than the payment of teachers' wages and further makes any treasurer personally liable for the amount of the teachers' wages if he has used such moneys for any other purpose.<sup>115</sup>

No changes have been made in the forbidden uses or the penalties for misuse of the funds. Present provisions governing these points are discussed in Chapter II.

<sup>111</sup> *Laws of Minn. Relating to Public Schools, 1881* p. 18.

<sup>112</sup> *Ibid.*

<sup>113</sup> *Session Laws of Minn., 1856* chap. 24 p. 29.

<sup>114</sup> *Revised Laws of Minn., 1878* sec. 79 p. 483.

<sup>115</sup> *Gen. Statutes of Minn., 1913* sec. 2762 p. 624.

## CHAPTER V

### HISTORY OF SPECIAL STATE APPROPRIATIONS FOR THE SUPPORT OF PUBLIC SCHOOLS IN MINNESOTA

Since 1878 the State of Minnesota has made special appropriations for state aid to certain types of schools, departments, and districts. These have been either special or annual appropriations; and the money has sometimes been distributed on a sliding scale according to enrollment, number of teachers, or some other basis, but more often has been awarded in flat sums. These appropriations have grown in number, size, and importance. No title was provided for them until 1915. The laws of that year contain the following provision:

For the purpose of aid to public schools there shall be established the following state funds: . . . *The Annual Fund*, which shall consist of the sums appropriated by the legislature for special aid to public schools or departments in the schools.<sup>1</sup>

The moneys of the Annual Fund have always been paid to school districts as such. The district first complies with certain requirements and then receives the special aid. The law has never made any requirements as to the use of the money apportioned. It can not be used for the purchase of buildings or sites, but aside from that, no direction is given as to its expenditure. It is added to the moneys available for school use and is not treated as a separate fund.

The Annual Fund has attracted much attention and discussion. Beginning with the high school as the only object benefited by it, it has been extended until it now reaches no less than twenty-one types of schools, districts, and instruction. Its appropriation and administration have been changed very little if any; its benefits have been extended further and further as will be seen by reference to Table XVII, page 57.

There are three reasons which probably contributed to the growth of this form of aid. It has usually been so administered as to contribute to the direct and conspicuous improvement of the schools. The amounts were sufficient to be a distinct and

<sup>1</sup> *Gen. Laws of Minn.*, 1915 chap. 296 sec. 1 p. 416.

appreciable aid to the districts receiving them, which resulted in enlisting the enthusiastic support of the districts and consequently favored the development of this general policy. It was possible to make these appropriations from year to year without increasing the amount of school taxes levied, that is, it was not necessary for the legislature to make a separate levy to raise these moneys, since they, like other appropriations, were drawn from the ever-increasing general revenues. Educators were pleased with the improvement in the schools; districts receiving or desiring to receive apportionments were satisfied by the financial help; and the taxpayer was not alarmed by a proposal to double or triple the state school tax. For all of these reasons, no very keen analysis of the extension of the system seems to have been made.

It is of significance, also, that the legislature has put practically only one check upon the State High School Board in the disbursement of the Annual Fund. In 1911 it forbade the use of the total days of attendance as a basis for apportionment.<sup>2</sup> This basis is one which Cubberley recognizes as valuable,<sup>3</sup> and is one of the two bases recommended in 1914 by the Public School Commission.<sup>4</sup> This provision does not appear in the school laws for 1915.

The number of new schools qualifying for aid each year has been so great that there have been large deficits in the Annual Fund. The \$150,000 set aside from the proceeds of the state 1-mill school tax is not sufficient to cover these deficits. It has been customary to apportion the available money pro rata among the schools qualifying, and to ask the next session of the legislature to appropriate money to cover the deficits. The increase in the amount of this deficit has been a source of inconvenience and alarm and is one of the evident defects of the present system.

In 1914 the Public School Commission appointed by the legislature reported that the system of rural-school aid should be revised.<sup>5</sup> The legislature ignored the recommendations of

<sup>2</sup> *Ibid.*, 1911 chap. 61 sec. 1 p. 79.

<sup>3</sup> E. P. Cubberley, *School Funds and Their Apportionment* p. 252.

<sup>4</sup> Public Education Commission, *Report to the Governor, 1914* p. 24.

<sup>5</sup> *Ibid.* p. 25.

this commission. In 1917 the governor vetoed a bill appropriating \$1,070,000 to pay the deficit in state aid for 1916-17. In explanation of this, he wrote, "It is generally admitted that the state-aid plan should be changed. The need of a change is one reason why I vetoed the school-aid item referred to."<sup>6</sup> He then appointed a committee to make recommendations for changes in the school laws. It is expected that the report of this committee will be presented to the next session of the legislature. The welfare of the schools is at stake in this matter, and the action of the legislature is of vital importance.

The administration of special state aid to public schools in Minnesota has always been in the hands of the State High School Board.<sup>a</sup> A brief account of this board and its work is necessary to any discussion of state aid.

The State High School Board was created in 1878,<sup>7</sup> the same year in which special aid was first granted. This board, as provided by law, consisted of the superintendent of public instruction, the president of the University, and one member appointed by the governor. Its function was "to establish any necessary and suitable rules and regulations relating to examinations, reports and other proceedings under this act."<sup>8</sup>

Three years later, in 1881, the powers of the board were extended by an act providing that "The High School Board shall have full discretionary power to consider and act upon applications of schools for state aid, and to prescribe the conditions upon which said aid shall be granted, and it shall be its duty to accept and aid such schools only as will, in its opinion, if aided, efficiently perform the service contemplated by law."<sup>9</sup>

In 1895, when special aid was granted to normal-training departments in high schools, the president of the Board of Normal Schools was made a member of the State High School Board.<sup>10</sup>

<sup>6</sup> Gov. J. A. A. Burnquist, *Statement by Governor Relative to State Aid to Schools and a Veto of a Portion Thereof* p. 3.

<sup>7</sup> *Gen. Laws of Minn., 1887* chap. 92 sec. 1 p. 154.

<sup>8</sup> *Ibid.*

<sup>9</sup> *Ibid.*, 1881 chap. 61 sec. 1 p. 62.

<sup>10</sup> *Ibid.*, 1895 chap. 186 p. 453.

<sup>a</sup> The State Board of Education mentioned in the statutes has never been organized. Its duties are performed by the State High School Board and the State Superintendent. (See *Laws Relating to Public Schools in Minn., 1915* sec. 209 p. 65.)



The Statutes of 1901 provided that the board should be composed of (1) the superintendent of public instruction, (2) the president of the state university, and (3) the superintendent or principal of any high school in Minnesota, to be appointed by the governor and confirmed by the senate.<sup>11</sup> Although the president of the Board of Normal Schools is not named in this list, his name appears in the state reports as a member of the State High School Board. Apparently this was an accidental omission in the wording of the law. The provision seems never to have been put into effect. In the same year, the board was empowered to establish any necessary and suitable rules and regulations relating to examinations, reports, acceptances of schools, courses of study, and other proceedings in connection with state aid.<sup>12</sup>

The Statutes of 1913 give the composition of the board as follows: (1) state superintendent of public instruction, (2) president of the state university, (3) president of the Board of Normal School Directors, (4) the superintendent or principal of a high school, and (5) one other person appointed by the governor and confirmed by the senate.<sup>13</sup>

The laws of 1915 provide that "the State Board of Education" shall distribute the annual funds and any other sums appropriated by the state to schools and libraries, in such manner and upon such condition as will enable them to perform efficiently the services required by law, and to further the educational interests of the state. To this end the State Board shall have power to fix the requirements for receiving and sharing in state aid."<sup>14</sup>

With almost negligible exceptions, the legislature has never interfered with the powers thus conferred upon the board. It is evident from the provisions of the statute that the rules of the board have all the force of law. The legislature appropriates moneys for state aid, but the State High School Board practically determines what schools shall share in that aid. No provision is made for any appeal from their decision. The regulations of the board governing the conditions for participation in state aid have been issued from time to time in the form

<sup>11</sup> *Gen. Laws of Minn., 1901* chap. 148 p. 193.

<sup>12</sup> *Ibid.*

<sup>13</sup> *Gen. Statutes of Minn., 1913* sec. 2888 p. 644.

<sup>14</sup> *Gen. Laws of Minn., 1915* chap. 296 sec. 2 p. 416.

<sup>b</sup> See note a, p. 52.

of bulletins. These regulations have gradually raised the requirements for participation and have been of very great importance in the progress of the schools. The rules of the board are decidedly detailed and too lengthy for reproduction here.<sup>c</sup>

TABLE XVI  
STATE AID TO PUBLIC SCHOOLS—1882-1916<sup>15</sup>

YEAR	HIGH SCHOOL	GRADED SCHOOL	CONSOLIDATED SCHOOL	SEMI-GRADED SCHOOL	RURAL SCHOOLS		
					FIRST CLASS	SECOND CLASS	C CLASS
1882	38	.....	.....	.....	.....	.....	.....
1884	53	.....	.....	.....	.....	.....	.....
1886	58	.....	.....	.....	.....	.....	.....
1888	57	.....	.....	.....	.....	.....	.....
1890	67	.....	.....	.....	.....	.....	.....
1892	69	.....	.....	.....	.....	.....	.....
1894	85	.....	.....	.....	.....	.....	.....
1896	86	87	.....	.....	.....	.....	.....
1898	100	97	.....	.....	.....	.....	.....
1899	.....	.....	.....	.....	457	.....	.....
1900	115	110	.....	190	662	.....	.....
1902	141	119	.....	243	747	.....	.....
1904	162	145	.....	270	835	.....	.....
1906	192	142	.....	309	1,094	492	.....
1908	206	152	.....	340	1,305	632	.....
1910 <sup>d</sup>	206	165	.....	399	1,860	1,127	.....
1912	211	201	32	435	2,453	1,396	555
1914	215	222	80	463	3,208	1,435	745
1916	230	241	139	507	3,992	2,018	.....

Table XVI summarizes the number of each class of schools receiving special aid from 1882 to 1916.

The history of appropriations for special state aid is one of increasing amounts appropriated for the benefit of an ever-growing number of objects. From 1878 to 1896 state aid was apportioned only to high schools. In 1896 graded schools received aid also; in 1899, rural schools; in 1900, semi-graded schools; in 1906, rural schools of the second class; and in 1912, consolidated schools and rural schools of Class C. In 1882, the first year for which there are returns, 38 high schools received state aid;

<sup>15</sup> *Gen. Laws of Minn., 1915* chap. 296 sec. 2 p. 416.

<sup>c</sup> See p. 25.

<sup>d</sup> Classification changed to high and graded and semi-graded and rural in 1910.

in 1916, 230 high schools, 241 graded schools, 139 consolidated schools, 507 semi-graded schools, 3,992 Class A rural schools, and 2,018 Class C rural schools, a total of 7,127 schools.<sup>16</sup> Many of these schools, it should be noted also, received aid on several bases, so that these figures only partly show the increase in aid granted.

The objects benefited by appropriations for state aid are divided into seven types: (1) high schools, (2) graded schools, (3) consolidated schools, (4) semi-graded and rural schools, (5) special departments in the various types of schools, (6) districts levying a special school tax of more than twenty mills, and (7) school libraries. In the discussion of the aid given to each of these classes of objects, it should be remembered that in every case the requirements for participation have always been subject to interpretation and additions by the State High School Board.\*

#### STATE AID TO HIGH SCHOOLS

Special aid to high schools has always consisted of flat sums awarded to districts supporting high schools meeting the requirements of the State High School Board. No particular restrictions have ever been put upon the use of the money. Since 1909 it has been provided that no district shall receive more high-school aid than the amount expended for the current support of the high school.<sup>17</sup>

The first state aid to high schools was granted in 1878. Four hundred dollars was to be paid to each school complying with the following requirements:

First, that there shall be regular and orderly courses of study, embracing all the branches prescribed as prerequisite for admission to the collegiate department of the University of Minnesota, not lower than the third, or sub-freshman class. Second, that the said school receiving pecuniary aid under this act, shall at all times permit the said board of commissioners, or any of them, to visit and examine the classes pursuing the same preparatory courses.<sup>18</sup>

In 1899, the amount of aid to each high school was increased from \$400 to \$800, and the following requirements were made:

<sup>16</sup> *Nineteenth Bienn. Rept. Minn. Dept. of Educ., 1915-16* p. 13.

<sup>17</sup> *Gen. Laws of Minn., 1909* chap. 334 sec. 1 p. 381.

<sup>18</sup> *Ibid., 1878* chap. 92 sec. 5 p. 155.

\* See p. 25.

(1) a term of nine months, (2) free tuition for residents of the state of school age, (3) a regular and orderly course of study embracing all branches prescribed by the State High School Board as prerequisite for admission to the collegiate department of the state university, (4) meeting the regulations of the State High School Board, and being open to inspection by them at any time.<sup>19</sup>

Aid to high schools was increased to \$1,000 in 1901,<sup>20</sup> and to \$1,500 in 1903.<sup>21</sup> In 1909 it was increased to \$1,750 with the provision that no high school should receive more than the amount actually expended exclusive of buildings and repairs.<sup>22</sup> In 1913 aid was made \$2,200,<sup>23</sup> the most that has ever been paid. In 1915, important changes in state aid were introduced. Besides flat sums to high schools, aid for special departments within the high schools was provided. This made it possible for a high school to receive aid on more than one basis and for more than one purpose. At the same time, the aid for high-school work alone was reduced to \$1,800.<sup>24</sup>

In 1881, the number of schools which could be aided in any one county was limited to three.<sup>25</sup> The minimum period of aid to a school which continued to comply with requirements was fixed at three years.<sup>26</sup> In 1883, permission was given to grant aid to not more than five schools within any one county.<sup>27</sup> In 1901 the number of schools to be aided in any one county was increased to seven, and the minimum time for such aid to a school which continued to comply with regulations was decreased from three to two years.<sup>28</sup> The maximum number of state high schools in any one county was increased to nine in 1909.<sup>f</sup>

<sup>19</sup> *Gen. Laws of Minn., 1899* chap. 352 art. 3 sec. 12 p. 471.

<sup>20</sup> *Ibid.*, 1901 chap. 189 sec. 1 p. 265.

<sup>21</sup> *Ibid.*, 1903 chap. 184 sec. 1 p. 274.

<sup>22</sup> *Ibid.*, 1909 chap. 334 sec. 1 p. 381.

<sup>23</sup> *Ibid.*, 1913 chap. 298 p. 427.

<sup>24</sup> *Ibid.*, 1915 chap. 296 sec. 6 p. 417.

<sup>25</sup> *Ibid.*, *Extra Session, 1881* chap. 61 p. 62.

<sup>26</sup> *Ibid.*

<sup>27</sup> *Ibid.*, 1883 chap. 40 sec. 1 p. 41.

<sup>28</sup> *Ibid.*, 1901 chap. 19 sec. 1 p. 20.

<sup>f</sup> "According to the general statutes of both 1905 and 1913, the limit as to number of high schools to receive aid in any one county is seven, although the general laws of 1909 give it as nine. The place where the maximum number was changed from seven to nine cannot be found. The general statutes are supposed to be final by court practice." R. A. Kent, *State Aid to Public Schools* p. 29.

No limit upon the number of schools to be aided in any county is to be found in the school laws of 1915.

The number of high schools receiving aid under this plan has increased steadily and consistently from the beginning, as will be seen by consulting Table XVII. At present, these flat sums granted to high schools are not, it must be remembered, the only types of aid which high schools may be eligible to receive. High schools, graded, and consolidated schools all receive aid for association<sup>a</sup> and for industrial departments.<sup>b</sup> For that reason those types of aid are discussed separately.

The number of high schools receiving aid and the amount of aid provided by law for each appear in the following table.

TABLE XVII  
NUMBER OF HIGH SCHOOLS RECEIVING AID AND THE AMOUNT OF AID  
PROVIDED BY LAW—1882-1916

YEAR	NUMBER OF HIGH SCHOOLS <sup>29</sup>	AMOUNT OF AID
1882.....	38	\$ 400 <sup>30</sup>
1884.....	53	400 <sup>30</sup>
1886.....	58	400 <sup>30</sup>
1888.....	57	400 <sup>30</sup>
1890.....	62	400 <sup>30</sup>
1892.....	69	400 <sup>30</sup>
1894.....	85	400 <sup>30</sup>
1896.....	86	400 <sup>30</sup>
1898.....	100	400 <sup>30</sup>
1900.....	115	800 <sup>31</sup>
1902.....	141	1,000 <sup>32</sup>
1904.....	162	1,500 <sup>33</sup>
1906.....	192	1,500 <sup>33</sup>
1908.....	206	1,500 <sup>33</sup>
1910.....	206	1,750 <sup>34</sup> (Not to exceed the amount expended)
1912.....	211	1,750 <sup>34</sup> (Not to exceed the amount expended)
1914.....	215	2,200 <sup>35</sup> (Not to exceed the amount expended)
1916.....	230	1,800 <sup>36</sup> (Plus aid to special departments)

<sup>29</sup> *Nineteenth Bienn. Rept. Minn. Dept. of Educ., 1915-16* p. 13.

<sup>30</sup> *Gen. Laws of Minn., 1878* chap. 92 sec. 5 p. 155.

<sup>31</sup> *Ibid., 1899* chap. 352 art. 3 sec. 12 p. 471.

<sup>32</sup> *Ibid., 1901* chap. 189 sec. 1 p. 265.

<sup>33</sup> *Ibid., 1903* chap. 184 sec. 1 p. 274.

<sup>34</sup> *Ibid., 1909* chap. 334 sec. 1 p. 381.

<sup>35</sup> *Ibid., 1913* chap. 298 p. 427.

<sup>36</sup> *Ibid., 1915* chap. 296 sec. 6 p. 417.

<sup>a</sup> See p. 60.

<sup>b</sup> See p. 63.

## AID TO GRADED SCHOOLS

Aid to graded schools was first granted in 1895. This applied only to graded schools outside towns and cities having state-aided high schools. The requirements for participation in this aid were left entirely to the judgment of the State High School Board. The amount payable to each school was \$200.<sup>37</sup>

In 1899, the legislature prescribed the following conditions for aid to graded schools: (1) a school session of nine months; (2) at least four departments of instruction in charge of teachers and a principal having the qualifications required by the State High School Board; (3) suitable buildings, library, and other apparatus; (4) regular and orderly courses of study including all branches required by the State High School Board.<sup>38</sup>

In 1901 the amount of aid for each school was increased to \$400,<sup>39</sup> in 1903 to \$550<sup>40</sup>, and in 1909 to \$600.<sup>41</sup> In 1909, \$500 further special aid to graded schools offering two years of high-school work was authorized.<sup>42</sup> In 1913, aid was increased to a maximum of \$700, or not more than one half the amount raised by the special local school tax for current expenses.<sup>43</sup>

In 1915 a new basis for distribution of aid to graded schools was established. A graded school in session nine months might receive: (1) \$600, (2) \$100 for each grade teacher employed in excess of four, (3) \$250 for each high-school teacher employed (total not to exceed \$1,300 under this provision).<sup>44</sup> The first year that aid was extended to graded schools the number of graded schools receiving aid was greater by one than the number of high schools so aided. Since that time, neither group has been consistently larger than the other, nor has there been any great difference between them, as will be seen by referring to Table XVI above.

Graded schools are eligible under certain circumstances to receive aid as central schools for association with rural schools.<sup>1</sup>

<sup>37</sup> *Gen. Laws of Minn., 1895* chap. 183 p. 451.

<sup>38</sup> *Ibid., 1899* chap. 352 art. 3 sec. 12 p. 468.

<sup>39</sup> *Ibid., 1901* chap. 189 sec. 2 p. 265.

<sup>40</sup> *Ibid., 1903* chap. 184 sec. 2 p. 275.

<sup>41</sup> *Ibid., 1909* chap. 334 sec. 1 p. 381.

<sup>42</sup> *Ibid., 1909* chap. 444 p. 540.

<sup>43</sup> *Ibid., 1913* chap. 298 p. 427.

<sup>44</sup> *Ibid., 1915* chap. 296 sec. 5 p. 416.

<sup>1</sup> See p. 60.

They may also receive special aid for the support of industrial departments.<sup>1</sup>

#### AID TO RURAL AND SEMI-GRADED SCHOOLS

Special aid to rural schools in Minnesota differs from all other special aid apportioned in that there have never been enough rural-school inspectors to visit each school every year, as is done in the case of high and graded schools receiving state aid. The funds are in the hands of the State High School Board, but the report of local officials approved by the county superintendent replaces state inspection.<sup>45</sup>

From 1899 to 1911 state aid was given to two classes of rural schools, semi-graded and rural.

Semi-graded schools received \$100 per year and were required to meet the following conditions: 1. An eight months session. 2. Two departments under teachers holding prescribed certificates. (One teacher was required to hold a first-grade or a professional certificate or to be a graduate of the advanced course of a normal school. The other teachers were required to hold second-grade certificates.) 3. Suitable buildings, a library, necessary apparatus. 4. A "regular and orderly" course of study. 5. Compliance with the rules of the superintendent of public instruction.<sup>46</sup> The amount of aid was increased to \$200 in 1901,<sup>47</sup> to \$250 in 1903,<sup>48</sup> and to \$300 in 1909.<sup>49</sup>

Aid to the so-called rural schools, or one-teacher rural schools, began with \$50 in 1897.<sup>50</sup> In 1899 the amount of aid was increased to \$75, and the conditions were made the same as for semi-graded schools except that one-teacher schools were not required to employ a teacher holding a first-grade or a professional certificate.<sup>51</sup>

In 1901 this aid was increased to \$100,<sup>52</sup> in 1903 to \$125,<sup>53</sup> in 1909 to \$150.<sup>54</sup>

<sup>45</sup> *Nineteenth Bienn. Rept. Minn. Dept. of Educ., 1915-16* p. 70.

<sup>46</sup> *Gen. Laws of Minn., 1899* chap. 334 sec. 1 p. 381.

<sup>47</sup> *Ibid.*, 1901 chap. 189 sec. 3 p. 265.

<sup>48</sup> *Ibid.*, 1903 chap. 366 sec. 2 p. 665.

<sup>49</sup> *Ibid.*, 1909 chap. 334 p. 381.

<sup>50</sup> *Ibid.*, 1897 chap. 259 p. 483.

<sup>51</sup> *Ibid.*, 1899 chap. 352 art. 5 sec. 25 p. 469.

<sup>52</sup> *Ibid.*, 1901 chap. 189 sec. 4 p. 265.

<sup>53</sup> *Ibid.*, 1903 chap. 366 sec. 3 p. 665.

<sup>54</sup> *Ibid.*, 1909 chap. 334 sec. 1 p. 381.

<sup>1</sup> See p. 63.

In 1909 aid was given to schools meeting all of these requirements except the one relating to certification of teachers. Such schools employing a teacher holding a second-grade certificate were granted \$100.<sup>55</sup>

In 1911 rural schools were reclassified and granted aid as follows:<sup>56</sup>

Class A.....	Not more than \$150
1. Eight-months sessions	
2. Teachers holding first-grade certificates	
Class B.....	Not more than \$100
1. Eight-months sessions	
2. Teachers holding second-grade certificates	
Class C.....	Not more than \$75
1. Seven-months sessions	
2. Teachers holding second-grade certificates	

The same year \$150 aid was granted to any district discontinuing its own schools and providing for the transportation and instruction of its pupils in an adjoining district.<sup>57</sup>

The control of the State High School Board in the apportionment of this special aid was limited by a requirement that "aggregate-days-attendance" should not be used as "a rule [i.e. as a basis] for granting such aid."<sup>58</sup>

In 1915, the 1911 classification of rural schools into classes A, B, and C was dropped, and the number of teachers employed was used as a basis for apportionment as follows: 1. Each rural school in session eight months receives \$150 for each teacher holding a first-grade certificate; 2. Each rural school in session seven months receives \$100 for each teacher holding a second-grade certificate.<sup>59</sup>

A special type of aid to rural schools is that called Association Aid. In 1911, for the purpose of securing better supervision in rural schools and encouraging the teaching of agriculture, it was provided that rural schools might become "associated" with state high or graded schools having courses in agriculture. The "associated" rural school was required to defray part of the expense of the industrial education and was to be under the supervision of the principal or superintendent of the central

<sup>55</sup> *Gen. Laws of Minn., 1909* chap. 334 sec. 1 p. 381.

<sup>56</sup> *Ibid.*, 1911 chap. 60 sec. 1 p. 79.

<sup>57</sup> *Ibid.* chap. 167 p. 212.

<sup>58</sup> *Ibid.* chap. 60 sec. 1 p. 79.

<sup>59</sup> *Ibid.*, 1915 chap. 296 sec. 4 p. 416.



school. The central school was granted \$150 for each rural school so associated with it, and the rural school, \$50.<sup>60</sup> In 1915, the amount granted the central school was increased to \$200, but no increase was made in the amount due the associated rural school.<sup>61</sup>

From the first year that aid was granted to rural schools, the number of such schools receiving aid has been greater than that of all other schools combined.

### AID TO CONSOLIDATED SCHOOLS

Aid for consolidated schools was first awarded in 1901, when it was provided that districts might consolidate and qualify for special state aid in the same manner as any other independent district.<sup>62</sup> Nine years later, in 1910, the state superintendent wrote:

Comparatively little progress in rural school consolidation has been made, and it seems certain that little will be, through the mere argument that better schools will follow. The state must hold out a financial inducement before the small district will merge into the larger unit.<sup>63</sup>

In 1911, such "financial inducement" was offered in the form of special state aid. Consolidated schools were required (1) to have an eight months' session and (2) to employ a principal especially prepared to direct the teaching of agriculture and other industrial subjects.<sup>64</sup>

In addition to these general requirements, the following classification and apportionment were made.

TABLE XVIII  
STATE AID TO CONSOLIDATED SCHOOLS IN 1911<sup>65</sup>

CLASS	REQUIREMENTS	AMOUNT OF AID
Class A.....	1. District area of not less than 18 sections <sup>k</sup> ...	\$1,500
	2. Building of four rooms.....	
Class B.....	1. District area of not less than 18 sections...	\$1,000
	2. Building of three rooms.....	
Class C.....	1. District area of not less than 12 sections...	\$750
	2. Building of two rooms.....	

<sup>60</sup> *Ibid.*, 1911 chap. 82 p. 97.

<sup>61</sup> *Ibid.*, 1915 chap. 296 sec. 12 p. 418.

<sup>62</sup> *Ibid.*, 1901 chap. 262 p. 432.

<sup>63</sup> *Bienn. Rept. Minn. Supt. of Public Instr.*, 1909-10 p. 12.

<sup>64</sup> *Gen. Laws of Minn.*, 1911 chap. 207 p. 268.

<sup>65</sup> *Ibid.*

<sup>k</sup> A section contains 640 acres.

Special building aid not to exceed 25 per cent of the cost of the building nor more than \$1,500 was provided for consolidated schools of all of the three classes.

Under these provisions, 32 consolidated districts received aid in 1912,<sup>66</sup> and 80 in 1914.<sup>67</sup>

In 1915 the classification and apportionment for consolidated schools were changed. General requirements for consolidated schools adopted in 1913 included:<sup>68</sup> (1) suitable schoolhouses with necessary rooms and equipment; (2) transportation or room and board for pupils living more than two miles away; (3) library and necessary apparatus; (4) course of study as prescribed by the superintendent of public instruction; (5) a principal and other teachers having such qualifications as may be fixed by the superintendent of education; (6) an area of not less than twelve sections or of ten sections containing an incorporated village and having a valuation between \$200,000 and \$1,000,000.

Two classes of consolidated schools receive aid as follows:<sup>69</sup>

Class A.....	\$ 500
1. Session of 8 months	
2. 4 departments	
Class B.....	250
1. 2 departments	
Both classes	
Reasonable expense for transportation of pupils—not to exceed.....	2,000
Both classes	
<sup>1</sup> / <sub>4</sub> the cost of buildings—not to exceed.....	2,000

Under these provisions the number of consolidated schools receiving aid increased from 80 in 1914 to 139 in 1916.<sup>70</sup> The superintendent's report for that year gives the total number of consolidated districts in the state as 210, and the total enrollment in consolidated schools as 35,716 pupils.<sup>71</sup>

Consolidated schools are eligible for aid through their special departments as well,<sup>1</sup> and for "association" aid.<sup>m</sup>

<sup>66</sup> *Nineteenth Bienn. Rept. Minn. Dept. of Educ., 1915-16* p. 13.

<sup>67</sup> *Ibid.*

<sup>68</sup> *Gen. Laws of Minn., 1915* chap. 296 sec. 9 p. 417.

<sup>69</sup> *Bienn. Rept. Minn. Dept. of Educ., 1915-16* p. 35.

<sup>70</sup> *Ibid.* p. 36.

<sup>71</sup> *Ibid.*

<sup>1</sup> See p. 63.

<sup>m</sup> See p. 60.

## AID TO SPECIAL DEPARTMENTS

Aid to special industrial departments began in 1909, and has been extended at some time to all of the following departments: (1) teacher training; (2) agriculture; (3) manual training; (4) home training; (5) commercial training. Any of these departments except the teacher training may be in connection with a state high, graded, or consolidated school. Teacher-training departments must be in four-year high schools.

## TEACHER-TRAINING DEPARTMENTS

Teacher-training departments were the first special departments to receive aid in Minnesota. Provision was first made for them in 1895,<sup>72</sup> and their growth has been steady since that time. The deficits in the apportionment of state aid to other departments has never affected them. It has been the policy of the state to regard them as a part of the state system for training teachers rather than as a feature of local school advantages, and the state has borne the largest part of their expense.

In 1895, \$500 aid was provided for teacher-training departments meeting the following requirements: (1) connected with a state high school; (2) offering a review of common branches and a course in methods in the senior year; (3) admitting only students who had completed three years of high-school work; (4) employing a special teacher with special training; (5) having not fewer than eight pupils.<sup>73</sup>

In 1897, another act provided for the payment of the 1895 aid to schools which had complied with all of the requirements except that relating to the number of pupils.<sup>74</sup> An act of 1903 increased the amount of annual aid to \$750.<sup>75</sup> In 1913, aid was increased to \$1,000.<sup>76</sup> The designation of the schools to receive such aid was left to the State High School Board.<sup>77</sup>

In 1915, the amount of aid was increased and was based on the size of the department as follows:<sup>78</sup>

<sup>72</sup> *Gen. Laws of Minn.*, 1895 chap. 186 p. 453.

<sup>73</sup> *Ibid.*

<sup>74</sup> *Ibid.*, 1897 chap. 276 p. 504.

<sup>75</sup> *Ibid.*, 1903 chap. 359 p. 649.

<sup>76</sup> *Ibid.*, 1913 chap. 267 sec. 1 p. 369.

<sup>77</sup> *Ibid.*

<sup>78</sup> *Ibid.*, 1915 chap. 296 sec. 8 p. 417.

Departments employing 1 teacher.....	\$1,200
Departments employing more than 1 teacher—not to exceed.....	2,000
Departments employing more than 2 teachers and enrolling not less than 50 pupils—not to exceed.....	2,800

The number of these departments has steadily increased until the last biennium. The present policy of the board is to provide enough of them to serve as convenient local centers for the training of rural teachers rather than to make them a part of every high school.

The difficulty of securing much school data is well illustrated by the teacher-training departments. Although we know they existed from 1896 on, a search of the state superintendents' reports page by page gives no data for the years from 1896 to 1906. All data found concerning them appears in the following table:

TABLE XIX  
NUMBER OF NORMAL-TRAINING DEPARTMENTS IN  
MINNESOTA—1896-1917

YEAR	NUMBER OF DEPARTMENTS	ENROLLMENT	ANNUAL STATE AID
1896.....	57 <sup>79</sup>	... <sup>n</sup>	\$ 500
1903.....	... <sup>n</sup>	... <sup>n</sup>	750
1906.....	13 <sup>80</sup>	229 <sup>80</sup>	750
1907.....	10 <sup>81</sup>	182 <sup>81</sup>	750
1908.....	10 <sup>82</sup>	169 <sup>82</sup>	750
1909.....	8 <sup>83</sup>	... <sup>n</sup>	750
1910.....	28 <sup>80</sup>	489 <sup>80</sup>	750
1911.....	56 <sup>80</sup>	740 <sup>80</sup>	750
1912.....	81 <sup>80</sup>	1,081 <sup>80</sup>	750
1913.....	80 <sup>84</sup>	979 <sup>84</sup>	1,000
1914.....	105 <sup>85</sup>	... <sup>†</sup>	1,000
1915.....	120 <sup>86</sup>	... <sup>†</sup>	1,000
1916.....	129 <sup>87</sup>	1,667 <sup>87</sup>	1,000
1917.....	121 <sup>87</sup>	1,515 <sup>87</sup>	1,000

<sup>79</sup> *Bienn. Rept. Minn. Supt. of Public Instr., 1895-96* p. 56.

<sup>80</sup> *Ibid., 1911-12* p. 49.

<sup>81</sup> *Ibid., 1907-8* p. 172.

<sup>82</sup> *Ibid.,* p. 197.

<sup>83</sup> *Ibid., 1909-10* p. 274.

<sup>84</sup> *Ibid., 1912-13* p. 61.

<sup>85</sup> *Ibid., 1913-14* p. 34.

<sup>86</sup> *Ibid., 1915-16* p. 116.

<sup>87</sup> *Annual Rept. Minn. Inspector of State High Schools, 1917* p. 6.

<sup>n</sup> Not given in reports available.

This table gives us an instance where another element than that of state aid has exercised great influence. From 1906 to 1909 there is a decrease of 38 per cent. From 1909 to 1910, without any increase of state aid, the number of departments increases more than 200 per cent, and by 1911 there are seven times as many as in 1909. This increase is due to the fact that the State High School Board ruled to accept the marks earned in such a course in lieu of an examination for a teacher's certificate.<sup>88</sup> State aid in itself is not sufficient to determine the development of schools in every case.

The work of these departments has been useful and generally satisfactory. With regard to their work, the state superintendent of education wrote in 1916:

There has been a marked betterment in the training of teachers and the quality of teaching in the country. Through the services of our high-school teacher-training department, schools can now be provided with teachers who have had three or four years of high-school training and one year of professional work.<sup>89</sup>

#### AGRICULTURAL DEPARTMENTS

Aid to schools teaching agriculture has been appropriated and apportioned under three acts, namely: the Putnam Act, the Benson-Lee Act, and the special aid appropriations for 1915 and 1917.

The Putnam Act was passed in 1909, and provided \$2,500 annual aid for high, graded, or consolidated schools fulfilling the following requirements:<sup>90</sup>

1. Instruction in
  - a. agriculture
  - b. manual training
  - c. home training
2. Demonstration tract of not less than five acres
3. Free tuition to residents of the state
4. Detailed courses in agriculture
5. A winter short course if there was demand for it.

Aid was to be given to not more than ten schools the first year; not more than ten were to be added each following biennium; and only one school in any county could be added in any two years.<sup>91</sup>

<sup>88</sup> *Bienn. Rept. Minn. Supt. of Public Instr., 1909-10* p. 224.

<sup>89</sup> *Ibid.*, 1915-16 p. 34.

<sup>90</sup> *Gen. Laws of Minn., 1909* chap. 247 p. 291.

<sup>91</sup> *Ibid.*

The provisions of this law have been carried out. The report for 1915 names thirty-eight schools receiving aid under this act.<sup>92</sup> It is evident that this is within two of the maximum number possible at this time under the provision for the addition of new schools to the list. This act was repealed by the Statutes of 1915.

The Benson-Lee Act was passed in 1911.<sup>93</sup> As passed, it gave \$1,000 to any high or graded school offering instruction in agriculture and either home economics or manual training.<sup>94</sup> In 1913, the amount of aid offered was increased to \$1,800 per year.<sup>95</sup> This act was superseded by the provisions of 1915.

In 1915 the present act was passed concerning aid for the teaching of agriculture. This provided that "high, graded, or consolidated schools maintaining courses in agriculture . . . shall receive \$1,000 for the agricultural course. . . . The amount of aid shall not exceed the salaries paid in the department."<sup>96</sup>

The state reports make no mention of instruction in agriculture previous to 1909-10, although a statement of the number of students studying each high-school subject is given. The increase in the total number of schools offering instruction in agriculture follows.

TABLE XX  
DEPARTMENTS OF AGRICULTURE, ENROLLMENT AND AID

YEAR	DEPARTMENTS	ENROLLMENT	AMOUNT OF STATE AID
Previous to 1910 . . . . .	0	0	0
1909-10 . . . . .	48 <sup>a</sup>	1,331 <sup>97</sup>	\$ 833 <sup>b</sup>
1911-12 . . . . .	116 <sup>97</sup>	2,961 <sup>97</sup>	833 <sup>c</sup> or 500 <sup>d</sup>
1913-14 . . . . .	136 <sup>97</sup>	4,053 <sup>97</sup>	833 <sup>b</sup> or 900 <sup>d</sup>
1915-16 . . . . .	152 <sup>98</sup>	9,656 <sup>98</sup>	1,000 <sup>e</sup>
1916-17 . . . . .	156 <sup>98</sup>	10,322 <sup>98</sup>	1,000 <sup>e</sup>

<sup>92</sup> *Annual Rept. Minn. Inspector of State High Schools, 1914-15* p. 56.

<sup>93</sup> *Gen. Laws of Minn., 1911* chap. 91 p. 108.

<sup>94</sup> *Ibid.*

<sup>95</sup> *Ibid.*, 1913 chap. 96 p. 98.

<sup>96</sup> *Ibid.*, 1915 chap. 296 sec. 7 p. 417.

<sup>97</sup> *Ann. Rept. Minn. Inspector of State High Schools, 1914* p. 32.

<sup>98</sup> *Ibid.*, 1917 p. 6.

<sup>a</sup> Not all of these departments received aid. Only ten received state funds. See p. 65.

<sup>b</sup> Aid offered under the Putnam Act for agriculture and home economics and manual training.

<sup>c</sup> Aid offered under Benson-Lee Act for agriculture and either home economics or manual training.

<sup>d</sup> Aid offered for departments of agriculture alone.

<sup>e</sup> Aid offered for departments of agriculture alone.

In 1916-17 there were only forty high schools in the state which did not offer instruction in agriculture.<sup>99</sup>

#### MANUAL-TRAINING AND HOME-ECONOMICS DEPARTMENTS

Departments of manual training and home economics first received special aid in 1909 under the Putnam Act,<sup>s</sup> which provides aid for schools offering agriculture, manual training, and home economics. In 1911, they were provided for in the Benson-Lee Act,<sup>t</sup> which gives aid to schools offering agriculture and either manual training or home economics.

In 1915, the law provided \$600 in aid to each high or graded school for each department of either manual training or home economics.<sup>100</sup> In 1917, this portion of the act of 1915 was repealed,<sup>101</sup> and manual training and home economics no longer receive state aid.

TABLE XXI

#### DEPARTMENTS AND ENROLLMENT IN MANUAL TRAINING AND HOME ECONOMICS IN MINNESOTA—1894-1917

YEAR	MANUAL TRAINING			HOME ECONOMICS		
	NUMBER OF DEPARTMENTS	ENROLLMENT	AMOUNT OF STATE AID	NUMBER OF DEPARTMENTS	ENROLLMENT	AMOUNT OF STATE AID
1894.....	6 <sup>102u</sup>	325 <sup>102u</sup>	0 <sup>u</sup>	0	0	0
1895.....	9 <sup>103</sup>	678 <sup>103</sup>	0	.....	.....	0
1900.....	7 <sup>104</sup>	745 <sup>104</sup>	0	.....	.....	0
1905.....	17 <sup>104</sup>	2,189 <sup>104</sup>	0	.....	.....	0
1910.....	122 <sup>104</sup>	4,770 <sup>104</sup>	\$833 <sup>v</sup>	Cooking 32 <sup>104</sup>	1,267 <sup>104</sup>	.....
				Sewing 61	1,616	\$833 <sup>v</sup>
1912.....	168 <sup>104</sup>	6,892 <sup>104</sup>	\$833 <sup>v</sup> or 500 <sup>w</sup>	Cooking 100 <sup>104</sup>	3,662 <sup>104</sup>	\$833 <sup>v</sup>
				Sewing 146	4,587	or 500 <sup>w</sup>
1913.....	180 <sup>104</sup>	7,064 <sup>104</sup>	\$833 <sup>v</sup> or 500 <sup>w</sup>	Cooking 130 <sup>104</sup>	4,795 <sup>104</sup>	\$833 <sup>v</sup>
				Sewing 154	5,637	or 500 <sup>w</sup>
1914.....	185 <sup>104</sup>	7,350 <sup>104</sup>	\$833 <sup>v</sup> or 900 <sup>w</sup>	Cooking 165 <sup>104</sup>	5,799 <sup>104</sup>	\$833 <sup>v</sup>
				Sewing 179	6,680	or 900 <sup>w</sup>
1916.....	131 <sup>98</sup>	12,770 <sup>98</sup>	\$600 <sup>100</sup>	185 <sup>98</sup>	17,251 <sup>98</sup>	\$600 <sup>100w</sup>
1917.....	178 <sup>98</sup>	14,865 <sup>98</sup>	\$600 <sup>100</sup>	201 <sup>98</sup>	18,039 <sup>98</sup>	\$600 <sup>100w</sup>

<sup>98</sup> Ann. Rept. Minn. Inspector of State High Schools, 1917 p. 6.

<sup>99</sup> Ibid. p. 12.

<sup>100</sup> Gen. Laws of Minn., 1915 chap. 296 sec. 7 p. 417.

<sup>101</sup> Ibid., 1917 chap. 437 sec. 8 p. 667.

<sup>102</sup> Rept. of Minn. High School Board, 1894 p. 8.

<sup>103</sup> Ibid., 1905 p. 13.

<sup>104</sup> Ann. Rept. Minn. Inspector of State High Schools, 1914 p. 32.

<sup>s</sup> See p. 65.

<sup>t</sup> See p. 66.

<sup>u</sup> All in Duluth, St. Paul, and Minneapolis.

<sup>v</sup> State aid provided under Putnam Act. See p. 65.

<sup>w</sup> State aid provided under Benson-Lee Act. See p. 66.

In 1916-17 there was not a single high school in the state which did not offer either manual training or domestic science.<sup>105</sup>

It is to be observed that the number of schools offering manual training shows three distinct periods of marked increase. These are 1910, when aid was granted by the Putnam Act; in 1912, when further aid was granted by the Benson-Lee Act; and 1916 when aid was granted separately to such departments. The same periods of marked growth may be noted in the progress of home economics.

TABLE XXII  
COMMERCIAL TRAINING DEPARTMENTS AND ENROLLMENT IN MINNESOTA—1903-17

YEAR	NUMBER OF CLASSES IN STATE	ENROLLMENT IN STATE	AMOUNT OF STATE AID
1903-4 .....	1 <sup>106</sup>	... x	None
1907-8 .....	Shorthand 20 <sup>107</sup> Typewriting 27	... x	None
1909-11 .....	Shorthand 28 <sup>108</sup> Typewriting 39	....	\$833 <sup>y</sup>
1911-12 .....	Shorthand 43 <sup>108</sup> Typewriting 53	Bookkeeping 2,644 <sup>10x</sup> Shorthand 1,414 Typewriting 1,627	\$833 <sup>y</sup> or 500 <sup>z</sup>
1913-14 .....	Shorthand 56 <sup>108</sup> Typewriting 67	Bookkeeping 2,640 <sup>108</sup> Shorthand 1,562 Typewriting 2,026	\$833 <sup>y</sup> or 900 <sup>z</sup>
1915-16 .....	56 <sup>109</sup>	8,285 <sup>109</sup>	600 <sup>110</sup>
1916-17 .....	82 <sup>109</sup>	15,718 <sup>109</sup>	600 <sup>110</sup>

#### COMMERCIAL DEPARTMENTS

Commercial departments first received special aid in 1915; \$600 was the amount set for each department. This provision

<sup>105</sup> *Ann. Rept. Minn. Inspector of State High Schools, 1917* p. 12.

<sup>106</sup> *Rept. Minn. High School Board, 1905* p. 12.

<sup>107</sup> *Ann. Rept. Minn. Inspector of State High Schools, 1908* p. 19.

<sup>108</sup> *Ibid., 1914* p. 32.

<sup>109</sup> *Ibid., 1917* p. 6.

<sup>110</sup> *Gen. Laws of Minn., 1915* chap. 296 sec. 7 p. 417.

x Not given in reports.

y State aid provided only by the Putnam Act. See p. 65.

z State aid provided by the Benson-Lee Act. See p. 66.



is still in force. It is very difficult to secure complete data concerning commercial work offered before state aid was given it. The table on page 68 will give some idea of the increase in the number of departments.

### AID TO SCHOOL LIBRARIES

In 1887, provision was made for state aid to school libraries. Any district purchasing books from the list of books recommended by the department was entitled to a refund of one half the money expended. The total aid the first year, however, was not to exceed \$20, the second year, \$10, and \$5 thereafter.<sup>111</sup>

In 1895 this was amended to give \$20 aid the first year and \$10 for subsequent years.<sup>112</sup>

In 1915 additional annual aid for libraries was provided. This amounts to \$10 for each teacher employed, with a maximum of \$25 per building. In order to receive this, the district must appropriate a like amount for the same purpose.<sup>113</sup>

### SUMMARY

The purposes for which the Annual Fund is appropriated and its lawful uses in general are evident from the preceding discussion of its disbursement. The laws, however, specifically forbid its use for the purchase of sites or for the erection of schoolhouses.<sup>114</sup>

In considering these appropriations for state aid, it should be remembered that districts may receive state aid under several provisions at the same time. For example, a district supporting a state high school might receive (1) high-school aid, \$1,800; (2) aid for agricultural department, \$1,000; (3) for commercial department, \$600; (4) for association with rural schools, \$150 for each associated school; (5) for library, \$25 per building; and (6) for tax levy above 20 mills, one third the amount raised by levy above 20 mills. As a matter of fact, the Public Education Commission reported in 1914 that one fifth of the rural schools in fourteen counties were receiving more from the state than they raised by local taxation.<sup>115</sup>

<sup>111</sup> *Gen. Laws of Minn.*, 1887 chap. 121 p. 205.

<sup>112</sup> *Ibid.*, 1895 chap. 85 p. 207.

<sup>113</sup> *Ibid.*, 1915 chap. 296 sec. 10 p. 417.

<sup>114</sup> *Ibid.*, 1911 chap. 341 sec. 3.

<sup>115</sup> *Public Educ. Commission, Rept. to the Governor* p. 30.

The following table shows the amount of school revenues furnished each year by the Annual Fund.

TABLE XXIII  
AMOUNT OF SCHOOL REVENUE DERIVED FROM THE ANNUAL FUND—  
1878-1916

YEAR	AMOUNT OF THE ANNUAL FUND	PER CENT OF TOTAL SCHOOL REVENUE FURNISHED BY THE ANNUAL FUND <sup>a3</sup>
1878.....	\$ 9,000 <sup>116</sup>	.3+ <sup>124</sup>
1880.....	20,000 <sup>117</sup>	1+ <sup>125</sup>
1885.....	23,000 <sup>118</sup>	.8+ <sup>126</sup>
1890.....	25,000 <sup>119</sup>	.5+ <sup>127</sup>
1895.....	38,000 <sup>120</sup>	.7+ <sup>128</sup>
1900.....	85,000 <sup>121</sup>	1+ <sup>129</sup>
1905.....	450,813.00 <sup>122</sup>	4+ <sup>130</sup>
1910.....	870,084.00 <sup>123</sup>	6+ <sup>131</sup>
1915.....	1,777,599.50 <sup>132</sup>	11+ <sup>133</sup>
1916.....	1,950,909.00 <sup>132</sup>	11+ <sup>133</sup>

Probably the most surprising fact revealed by this table is that the form of school support most talked of at present furnishes only a little more than one tenth of the total school revenues of this state. It also shows the growing importance of the Annual Fund, which furnished only three tenths of 1 per cent

<sup>116</sup> *Gen. Laws of Minn., 1878* sec. 5.

<sup>117</sup> *Ibid., 1879* chap. 27 sec. 2.

<sup>118</sup> *Ibid., 1883* chap. 40 sec. 1.

<sup>119</sup> *Ibid., 1887* chap. 256 sec. 1.

<sup>120</sup> *Rept. Minn. Supt. of Public Instr., 1895-96* p. 7.

<sup>121</sup> *Ibid., 1899-1900* p. 4.

<sup>122</sup> *Ibid., 1905-6* p. 347.

<sup>123</sup> *Ibid., 1909-10* p. 256.

<sup>124</sup> *Ibid., 1878* p. 309.

<sup>125</sup> *Bienn. Rept. Minn. State Auditor, 1881-82* p. 21.

<sup>126</sup> *Rept. U. S. Commissioner of Educ., 1885-86* p. 20.

<sup>127</sup> *Ibid., 1890-91* 1:20

<sup>128</sup> *Ibid., 1895-96* 1:xx.

<sup>129</sup> *Rept. Minn. Supt. Public Instr., 1901-2.*

<sup>130</sup> *Rept. U. S. Commissioner of Educ., 1905* 1:410.

<sup>131</sup> *Ibid., 1910* 2:678.

<sup>132</sup> *Rept. Minn. Dept. of Educ., 1915-16* p. 115.

<sup>133</sup> *Ibid.* p. 9.

<sup>a3</sup> Percentages in this column are computed on the basis of total revenues exclusive of balances on hand and income from the sale of bonds. The numbered footnotes give the sources for the total revenue for that year.

or one three-hundredth of the total school revenues in 1878, and now furnishes 11 per cent, or more than a tenth of them.

#### OTHER TYPES OF SPECIAL AID

Two other forms of state aid are closely parallel to those administered from the Annual Fund. These are the special aid to classes for defective pupils and to poor districts. The moneys, however, for these forms of aid are derived from the proceeds of the state school tax or Current School Fund. For that reason, discussion of them is reserved for Chapter VI.

## CHAPTER VI

### HISTORY OF STATE SCHOOL TAXATION

If education is a function of the state, it is evident that the support of schools can not be left entirely to the individual districts with their widely varying degrees of wealth and intelligence. The levying of a state school tax is a recognition of the right and duty of the state to provide public schools. Such a tax serves to insure certain moneys for every district. It is also a means for encouraging local reports to the state department. Properly disbursed, it should help to equalize the burdens of school support.

In any discussion of school taxation, it is necessary to distinguish clearly between a true state school tax and a local tax levied at the direction of the state. A true state school tax is levied upon all of the property of the state and disbursed for the good of the state school system as a whole. On the other hand, state law may provide for compulsory local tax which is levied upon all of the property in the state, but the proceeds of which are returned to the local unit raising them. With this distinction in mind, we may say that Minnesota has had three types of school taxation which were required by state law. 1. From 1858 to 1877, the so-called state school tax was a compulsory county tax; 2. Since 1877, the so-called county 1-mill tax has been a compulsory district tax; 3. Since 1887, there has been a true state school tax. The first two are properly local taxes and will be considered as such in Chapter VII.

From its earliest state history, Minnesota had been accustomed to local school taxes required by law. In 1887 a law provided for the levying of a 1-mill state tax. The proceeds of this tax were to be added to the income from the Permanent School Fund and apportioned on the same basis. This whole amount was known as the Current School Fund.<sup>1</sup> Such a tax was in harmony with suggestions made by the state superintendents as early as 1867.<sup>2</sup> It was the first form of state school support other than that drawn from federal land grants. From state reports of

<sup>1</sup> *Gen. Laws of Minn., 1887* chap. 41 sec. 84 p. 97.

<sup>2</sup> *Annual Rept., Minn. Supt. of Public Instr., 1867* p. 52.

the time it does not appear that there was any particular opposition to the passage of the law providing for this tax. No change has ever been made in it.

At present the state tax of .23 of a mill for the support of the state university is levied with the state school tax.<sup>3</sup> No change, however, has ever been made with regard to the rate of the school tax proper.

From 1888 to 1915, the proceeds of the state tax were added to the income from the Permanent School Fund and apportioned with it.<sup>4</sup> In 1915, however, it was provided that \$150,000 should be set aside from the state school tax to be used for the following purposes: (1) to aid poor districts; (2) to make up deficits in special aid appropriations; (3) to pay the tuition of non-resident pupils in special departments in state high, graded, or consolidated schools.<sup>5</sup> The same year a further provision directed that money for the aid of classes for defectives should be taken from the Current School Fund.<sup>6a</sup> These uses are discussed in Chapter II.

Conditions of participation in the proceeds of the state school tax and its lawful and forbidden uses have all been discussed under the history of the Endowment Fund with which it has always been apportioned with the exception noted above. The growth of classes for defectives has been described in Chapter II.

The following table shows the amounts derived each year from the state 1-mill school tax. The gradual but steady increase in the proceeds from \$409,072 in 1888 to \$1,423,480 in 1916, an increase of more than 200 per cent in twenty-eight years, is an example of how the growing wealth of the state increases the moneys raised on a constant tax levy. An annual levy of a certain number of mills instead of the appropriation of a fixed sum of money would make the Annual Fund a far more satisfactory means of school support.

<sup>3</sup> *Laws of Minn. Relating to Schools*, 1915 chap. 7 sec. 176 p. 59.

<sup>4</sup> *Gen. Statutes of Minn.*, 1913 sec. 2915 p. 648.

<sup>5</sup> *Gen. Laws of Minn.*, 1915 chap. 296 sec. 13 p. 418.

<sup>6</sup> *Ibid.* chap. 194 p. 258.

<sup>a</sup> Current School Fund is the title provided by the *Laws of Minnesota*, 1913, for the proceeds to the state 1-mill tax.

TABLE XXIV  
PROCEEDS OF THE STATE 1-MILL TAX—1888-1916

YEAR	AMOUNT OF THE STATE 1-MILL SCHOOL TAX	PER CENT OF TOTAL SCHOOL REVENUES DERIVED FROM THE STATE 1-MILL SCHOOL TAX <sup>†</sup>
1888.....	\$409,072.58 <sup>7</sup>	.11+ <sup>13</sup>
1890.....	514,390.69 <sup>8</sup>	.11+ <sup>14</sup>
1895.....	647,015.39 <sup>9</sup>	.13+ <sup>15</sup>
1900.....	600,190.05 <sup>10</sup>	.12+ <sup>16</sup>
1905.....	814,051.45 <sup>11</sup>	.08+ <sup>17</sup>
1910.....	1,093,192.99 <sup>12</sup>	.07+ <sup>18</sup>
1915.....	1,377,184.30 <sup>19</sup>	.08 <sup>21</sup>
1916.....	1,423,480.45 <sup>20</sup>	.08 <sup>22</sup>

The state school tax in Minnesota has never been treated as particularly important. It furnishes a decreasing percentage of the school revenues. The fact that it is disbursed with the Endowment Fund has made it less conspicuous than it might otherwise have been. State aid by special appropriations is nine years older than the true state school tax, and the immediate benefits of special appropriations have been so much more evident than those from the state school tax that discussion has centered around special aid, while little or no mention has

<sup>7</sup> *Bienn. Rept. Minn. State Auditor, 1887-88* p. 23.

<sup>8</sup> *Ibid.*, 1889-90 p. 31.

<sup>9</sup> *Ibid.*, 1895-96 p. 77.

<sup>10</sup> *Ibid.*, 1899-1900 p. 41.

<sup>11</sup> *Ibid.*, 1905-6 p. 65.

<sup>12</sup> *Ibid.*, 1909-10 p. 74.

<sup>13</sup> *Rept. U. S. Commissioner of Educ., 1888-89* 2:686.

<sup>14</sup> *Ibid.*, 1890-91 1:20

<sup>15</sup> *Ibid.*, 1895-96 1:1xx.

<sup>16</sup> *Rept. Minn. Supt. of Public Instr., 1901-2*.

<sup>17</sup> *Rept. U. S. Commissioner of Educ., 1905* 1:410.

<sup>18</sup> *Ibid.*, 1910 2:678.

<sup>19</sup> *Bienn. Rept. Minn. State Auditor, 1915-16* p. 75.

<sup>20</sup> *Ibid.* p. 83.

<sup>21</sup> *Rept. Minn. Dept. of Educ., 1915-16* p. 9.

<sup>22</sup> *Ibid.*

<sup>†</sup> Percentages in this column are computed on the basis of total revenues exclusive of balances on hand and income from the sale of bonds. The numbered footnotes give the sources for the total revenue for that year.

been made of the state school tax. It should be borne in mind that the proceeds of the state school tax do not arise from the same sources as does the income from the Permanent Fund, and that the constitution does not determine the apportionment of the revenues arising from the tax. For that reason, the proceeds of the tax certainly should be disbursed upon some more scientific basis than that now used.

## CHAPTER VII

### HISTORY OF LOCAL SCHOOL SUPPORT IN MINNESOTA

In a study of the schools of a state, local school support is of interest as an index to one of the effects of the system of state school support. The present chapter does not purport to give a complete study of local school support in Minnesota, but merely to present some of the important facts which are most closely related to the welfare of the state school system as a whole. Detailed information concerning local moneys is not available from state reports. No attempt will be made to trace special tax legislation which affects only the few large cities and special districts. The sale of bonds is not treated, since the money for their payment comes from the sources discussed here.

Local school support in Minnesota is derived from two sources, namely: taxation and fines. Taxes for local school support are divided into two kinds, compulsory and voluntary or special taxes designated as district taxes. The only compulsory local tax is the county school tax of 1-mill required by state law. Its proceeds are returned to the school district in which the property taxed is situated. The law provides that "the tax levied by school districts shall be known as the district school tax."<sup>1</sup> These are the terms provided in the statutes. "Local" and "special" are titles which are sometimes used more loosely.

Minnesota has had two kinds of compulsory local taxes, namely: county and district. That is, from 1858 to 1877 the proceeds of the compulsory school tax were returned to the counties in which they were collected. Since 1877 the proceeds of that tax have been returned to the district in which they have been collected. This is a matter of greater importance than may at first appear. If the moneys are returned to the county, the county may apportion them on a basis of school population or attendance or on some other basis better suited to equalize educational needs. The district, however, is so small a unit that a tax which is returned to the district raising it loses all chance of helping to equalize school burdens.

<sup>1</sup> *Gen. Statutes of Minn., 1913* sec. 2916.



TABLE XXV  
INCOME FROM THE COUNTY SCHOOL TAX—1858-74

YEAR	RATE IN MILLS	AMOUNT RECEIVED FROM TAX	PER CENT OF TOTAL SCHOOL REVENUES RECEIVED FROM THE COUNTY SCHOOL TAX <sup>a</sup>
1858.....	2½	\$83,693.55 <sup>2</sup>	.... <sup>b</sup>
1859.....	2½	71,152.58 <sup>2</sup>	.... <sup>b</sup>
1860.....	2½	73,303.63 <sup>2</sup>	.... <sup>b</sup>
1861.....	2½	79,963.02 <sup>2</sup>	.... <sup>b</sup>
1862.....	2	59,665.43 <sup>2</sup>	.... <sup>b</sup>
1863.....	2	63,321.53 <sup>2</sup>	.... <sup>b</sup>
1864.....	2	82,444.52 <sup>2</sup>	.... <sup>b</sup>
1865.....	2	90,254.63 <sup>2</sup>	.... <sup>c</sup>
1866.....	2	115,948.70 <sup>2</sup>	26+ <sup>4</sup>
1867.....	2	144,935.88 <sup>2</sup>	19+ <sup>5</sup>
1868.....	2	151,527.00 <sup>2</sup>	18+ <sup>6</sup>
1869.....	2	156,656.00 <sup>2</sup>	19+ <sup>7</sup>
1870.....	2	164,638.00 <sup>2</sup>	21+ <sup>8</sup>
1871.....	2	159,535.00 <sup>2</sup>	15+ <sup>9</sup>
1872.....	2	203,046.00 <sup>2</sup>	20+ <sup>10</sup>
1873.....	2	224,190.00 <sup>7</sup>	23+ <sup>11</sup>
1874.....	2	443,193.00 <sup>3</sup>	35+ <sup>12</sup>

When Minnesota became a state in 1858 it retained its territorial law providing for a compulsory school tax levy of 2½ mills.<sup>13</sup> Up to the time of the admission of the state no moneys

<sup>2</sup> *Rept. Minn. Supt. of Public Instr.*, 1867 p. 52.

<sup>3</sup> *Ibid.*, 1879 p. 29.

<sup>4</sup> *Rept. U. S. Commissioner of Educ.*, 1880-87 p. 76.

<sup>5</sup> *Ibid.*, 1887-88 p. 78.

<sup>6</sup> *Ibid.*, 1888-89 2:686.

<sup>7</sup> *Ibid.*, 1890-91 1:20.

<sup>8</sup> *Ibid.*, 1891-92 1:66.

<sup>9</sup> *Ibid.*, 1892-93 1:34.

<sup>10</sup> *Ibid.*, 1893-94 1:19.

<sup>11</sup> *Ibid.*, 1894-95 1:lii.

<sup>12</sup> *Ibid.*, 1895-96 1:xx.

<sup>13</sup> *Gen. Statutes of Minn.*, 1861 chap. 11 sec. 58 p. 71.

<sup>a</sup> Percentages in this column are computed on the basis of total revenues as stated in the numbered footnotes.

<sup>b</sup> No statement of total expenditures found in any report available.

had been available from the federal land grants. Upon the admission of the state, these lands became available for use. Therefore, in 1862 the rate of the county school tax was reduced to 2 mills.<sup>14</sup> The proceeds of this tax were returned to the county and apportioned by it to the districts upon the same basis as were the state funds; that is, upon school population until 1887, and upon school enrollment thereafter. In 1873 a new system of assessing the value of taxable property was adopted. It was supposed that this method would increase the property valuation of the state sufficiently so that a 1-mill tax levy would produce practically as much revenue as the 2-mill tax levy had formerly produced.<sup>15</sup> Accordingly, the *county* school tax was reduced to 1 mill.<sup>16</sup> The proceeds, however, fell from \$443,193 in 1874 to \$216,071 in 1875.<sup>17</sup> The rate, nevertheless, remained 1 mill. In 1873 this tax was changed to a district tax.<sup>18</sup> Table XXV shows the amounts received from the mill tax during the time it was returned to counties.

In 1873 this county school tax was changed to a district tax of 1 mill, that is, the proceeds were returned to the districts in which they were collected. Of the evil results of this change from a county to a district tax, the state superintendent wrote in 1880:

We have no method for equalizing to any extent upon the property of the state any part of the cost of our common schools. We began in 1858 with such a plan applied to counties as units of taxation. At first a tax of two-and-one-half mills was collected into county treasuries and disbursed equally upon the children of the counties. As the property of state increased, this rate was reduced until it became one mill. . . . But the selfishness of the cities prevailed. In 1874 our legislature, not understanding the result of its action, dropped counties as units of taxation and distribution and substituted petty school districts of which we have about 4,000, differing in size from six miles square, to not over two sections. In these districts . . . a rate of one mill is laid by county commissioners, but the tax is returned not as formerly upon scholars, but to each district in the exact amount which its property yields. . . . Thus with 4,000 different bases of taxation, ranging in valuation of property from poverty to abundant wealth, we have schools

<sup>14</sup> *Gen. Laws of Minn.*, 1861 chap. 1 sec. 35 p. 28.

<sup>15</sup> *Rept. Minn. Supt. of Public Instr.*, 1876 p. 42.

<sup>16</sup> *Ibid.* p. 43.

<sup>17</sup> *Ibid.*

<sup>18</sup> *Gen. Laws of Minn.*, 1873 sec. 42 p. 65.

so diverse in number of scholars, length of terms and quality of teaching, that it seems ridiculous to call them a system. . . . And why should we not demand for Minnesota what exists in a majority of our most progressive states? I mean a state school tax apportioned on scholars.<sup>19</sup>

In 1916, the state superintendent wrote:

There is neither hope nor justice in such a [district] system. No scheme of state aid will ameliorate this condition. The only just solution is the county as a unit for school support as well as for administration and supervision.<sup>20</sup>

Since the system was first adopted, no word of defense of the district school tax appears to have been offered by any educator. The only apparent reason for keeping such a plan seems to be some lingering idea that education is a private or local affair, and that one locality should not be called upon to aid education in another. Such a prejudice appears not to have been preserved anywhere in the Minnesota system except in the matter of the disbursement of the county 1-mill tax.

Special taxation by local school units for the support of schools has always been permitted in Minnesota.<sup>21</sup> The voluntary local taxes are known as special or district taxes. Such taxes have been levied since the earliest history of the state. It is strange to observe that although many districts have frequently failed to levy adequate and, in some cases, any, special taxes, the law has been content with providing a maximum rate which a district may not exceed in its levy. In 1878, the state superintendent wrote:

In many hundreds of our school districts there is less need of a maximum limit to taxation than of some plan that will secure an amount of special taxation equal to the real ability of the people.<sup>22</sup>

The same problem is still a matter of agitation in connection with state aid.

In 1861 the statutes provided that no property in the state should be taxed more than 5 mills for school purposes in any one year nor more than 10 mills for building schoolhouses.<sup>23</sup> In 1866 the levy for building purposes was reduced to 8 mills "unless

<sup>19</sup> *Rept. Minn. Supt. of Public Instr., 1879-80* p. 212

<sup>20</sup> *Rept. Minn. Dept. of Educ., 1915-16* p. 35.

<sup>21</sup> *Rept. Minn. Supt. of Public Instr., 1878* p. 24.

<sup>22</sup> *Ibid.* p. 27.

<sup>23</sup> *Gen. Laws of Minn., 1861* chap. 11 sec. 27 p. 62.

eight mills does not raise \$600."<sup>24</sup> In 1877 the statutes provided that the qualified voters should fix the amount to be raised and the county auditor should compute the necessary rate of levy. The levy was not to exceed 9 mills for school support and 1 mill for building purposes.<sup>25</sup> The Statutes of 1878 contained contradictory provisions concerning school taxation. The first is the same as that just quoted from the laws of 1877 except that instead of "one-mill," "one per cent" may be levied for building purposes.<sup>26</sup> This is the same as the levy for that purpose permitted by the laws of 1861, and was probably the intention of the legislators of 1877. The provision of 1878 which conflicts with this limits the tax for buildings and sites to 8 mills unless that will not raise \$600. It adds that no district shall vote a school tax of more than \$200 in any one year.<sup>27</sup> The Statutes of 1899 repeat the provision limiting the district school tax to 9 mills for the support of schools and 1 per cent for building purposes.<sup>28</sup>

In 1905 the limit upon taxation in common districts was raised to 15 mills for support. No district having less than ten voters, however, could vote a district school tax to exceed \$300. An independent district could not levy more than 8 mills for building purposes, but was not restricted as to levy for current support of schools.<sup>29</sup>

In 1913 an additional provision permitted any common-school district having a high school or a graded school to levy not to exceed 25 mills for school support. The maximum amount to be raised in a district having not more than ten voters was increased to \$400.<sup>30</sup>

In connection with the limit put upon district taxation, it should be remembered that the State gives not to exceed \$200 in special aid to each school in any district not having a state high or graded school where a levy of 15 mills does not raise \$500 for each school in session seven months.<sup>31</sup>

<sup>24</sup> *Gen. Laws of Minn., 1866* chap. 36 sec. 26 p. 303.

<sup>25</sup> *Ibid., 1877* chap. 6 sec. 79 p. 33.

<sup>26</sup> *Gen. Statutes of Minn., 1878* chap. 11 sec. 49 p. 226.

<sup>27</sup> *Ibid., 1878* chap. 36 sec. 19 p. 470.

<sup>28</sup> *Ibid., 1899* sec. 1558 p. 419.

<sup>29</sup> *Revised Laws of Minn., 1905* sec. 1415 p. 1409.

<sup>30</sup> *Gen. Statutes of Minn., 1913* sec. 1917 p. 648.

<sup>31</sup> *Gen. Laws of Minn., 1915* chap. 296 sec. 13 p. 418.

Inasmuch as common-school districts levy far lower taxes for support of schools than do either the special or the independent districts, these limitations upon the tax levy in common districts seem almost satirical. No limit is put upon the amount of district tax for support which may be levied by the independent districts, some of which levy as much as 51 mills.

As was pointed out in Chapter I, the local school units raised \$4.03 for every dollar of state school funds disbursed in 1915-16.<sup>32</sup> The matter of most vital interest to Minnesota schools is not revealed, however, in these figures. It must be borne in mind, as was said in Chapter I, that the Minnesota school problem is that of the rural schools. The greatest interest in this matter of district taxation concerns the comparison between the tax levies of the common and of the independent and special districts. This is one of the subjects upon which very little information is available. Such data as can be found, however, all bear out the statement that the rural districts are not bearing as great a burden of school taxation as are the cities.

TABLE XXVI

COMPARISON OF VOLUNTARY SCHOOL TAX RATE LEVIED IN COMMON AND INDEPENDENT AND SPECIAL DISTRICTS

YEAR	STATE AVERAGE OF SCHOOL-TAX LEVY IN SPECIAL AND INDEPENDENT DISTRICTS <sup>c</sup>	STATE AVERAGE OF SCHOOL-TAX LEVY IN COMMON DISTRICTS <sup>c</sup>
1875 .....	7.5 <sup>33</sup>	4.7 <sup>33</sup>
1890 .....	11.4 <sup>34</sup>	6.9 <sup>39</sup>
1891 .....	11.8 <sup>35</sup>	5.5 <sup>40</sup>
1892 .....	10.2 <sup>35</sup>	7.40
1910 .....	18.8 <sup>36</sup>	6.18 <sup>36</sup>
1916 .....	21.4 <sup>37</sup>	7.4 <sup>37</sup>
1917 .....	20.38	6.38

<sup>32</sup> *Nineteenth Bienn. Rept. Minn. Dept. of Educ., 1915-16* p. 184 Table 16.

<sup>33</sup> *Rept. Minn. Supt. of Public Instr., 1875* p. 47.

<sup>34</sup> *Ibid., 1889-90* p. 253.

<sup>35</sup> *Ibid., 1891-92* p. 158.

<sup>36</sup> *Ibid., 1909-10* p. 13.

<sup>37</sup> *Rept. Minn. Dept. of Educ., 1915-16* p. 187.

<sup>38</sup> *Ibid.* p. 217.

<sup>39</sup> *Rept. Minn. Supt. of Public Instr., 1889-90* p. 257.

<sup>40</sup> *Ibid., 1891-92* p. 160.

<sup>c</sup> These figures are only for the counties having the largest graded schools.

These figures show that a lower rate of taxation in common-school districts is a condition of long standing. They show, also, that the difference between the rate in common and in independent districts tends to become greater. In 1875, the levy in common districts was 62 per cent of that in special and independent districts. In 1890 it was 60 per cent; in 1910, it was 32 per cent; and in 1917, 30 per cent. In no year for which we have record here have the common districts ever levied as many mills of school tax as did the special and independent districts in 1875. From 1875 to 1917, the levy in special and independent districts nearly tripled; in the same period the levy in common districts increased by less than a third. These facts reveal the most serious defect in the present Minnesota school system, namely: the indifference of the taxpayer of the common-school districts. As long as the citizens of these districts are permitted to contribute so little to the support of their schools, so long will the problem of rural-school support remain unsolved.

Besides the revenues derived from taxation, local school funds have always received certain fines and forfeitures. The laws of 1858 provided that the school funds should receive fines for violations of laws in the following matters: (1) setting prairie or forest fires;<sup>41</sup> (2) disturbing religious meetings;<sup>42</sup> (3) illegal fishing;<sup>43</sup> (4) hours of manual labor.<sup>44</sup> In 1861, the *Act Establishing a Common School System for the State of Minnesota* provided:

As a further provision for the support of schools, there shall be set apart by the county treasurer of each county the proceeds of all fines for the breach of any penal laws not otherwise provided by law.<sup>45</sup>

This provision continued in force until 1897.<sup>46</sup> At present the schools receive only such fines as are definitely assigned to them. The ones at present payable to the school fund are named in Chapter III. The state reports so often record the proceeds of amounts derived from fines and forfeitures with the amounts derived from other sources that it is impossible to compute them for most years.

<sup>41</sup> *Gen. Laws of Minn.*, 1858 chap. 28 p. 62.

<sup>42</sup> *Ibid.* chap. 31 p. 65.

<sup>43</sup> *Ibid.* chap. 45 p. 105.

<sup>44</sup> *Ibid.* chap. 66 p. 154.

<sup>45</sup> *Gen. Statutes of Minn.*, 1861 chap. 11 sec. 58 p. 71.

<sup>46</sup> *Ibid.*, 1897 chap. 75 p. 81.

## CHAPTER VIII

### CONCLUSION

#### EFFECTS OF THE PRESENT SYSTEM OF SCHOOL SUPPORT—RECOMMENDED REFORMS IN SCHOOL SUPPORT

Many facts combine to make it very difficult to ascertain definitely the effects of any method of school support. Evidences of these results must be sought in the development of the school system, and any school system is acted upon by many causes besides the method of support. Furthermore, the facts concerning some phase of school support or progress are frequently left unrecorded and unreported until particular interest is directed toward them.

The effects of any system of school support may well be viewed in the light of its purpose. The following aims have been of importance in the history of Minnesota school support: (1) to equalize educational opportunities and burdens; (2) to stimulate local school support; (3) to foster certain types or departments of instruction; (4) to furnish state authorities a lever for unifying, standardizing, and elevating the entire system.

Let us now try to discover the extent to which Minnesota has worked toward the realization of these aims.

As has been pointed out, the Current School Fund is apportioned upon a basis which does not affect school standards or practices in the least. To share in it a district must have a school term of six months.<sup>1</sup> This provision was adopted in 1915 although the average term for the whole state for 1914 was eight months.<sup>2</sup> To be counted in the number of scholars determining the district's apportionment, a pupil must attend school 40 days.<sup>3</sup> In 1914, the average pupil attended school 96.4 days.<sup>4</sup> The fund does, however, serve to keep the local units in touch with the State Department of Education. Until the introduction of special state aid, the apportionment of the Current

<sup>1</sup> *Session Laws of Minn., 1915* chap. 296 sec. 3 p. 416.

<sup>2</sup> *Rept. of U. S. Commissioner of Educ., 1916* 2:30 Table 2.

<sup>3</sup> *Session Laws of Minn., 1915* chap. 296 sec. 3 p. 416.

<sup>4</sup> *Rept. of U. S. Commissioner of Educ., 1916* 2:22 Table 3.

Fund gave the only means for securing reports from local school officers. For districts not receiving special aid, it is still the chief, if not the only, strong incentive to coöperation with the state department.

The mode of disbursement of the portions reserved from the proceeds of the state 1-mill tax shows an effort to equalize school opportunities and burdens, and to encourage new types of instruction. Of the proceeds of this tax, \$150,000 are apportioned to the aid of districts not maintaining a state graded or high school, where a special tax levy of 15 mills does not raise \$500 for each school in session seven months.<sup>5</sup> Inasmuch as the average rate of special school tax in rural and semi-graded districts in many counties falls as low as 3 or 4 mills,<sup>a</sup> it is evident that the 119 schools aided on this basis in 1916<sup>b</sup> were making more than an average sacrifice for the purpose of local school support.

A second use of the proceeds of this tax is the payment of the tuition of non-resident pupils in the industrial departments of state high or graded schools.<sup>6</sup> The rules of the State High School Board provide that such tuition shall not exceed \$1 a month for each industrial subject taken by such a pupil.<sup>7</sup> No other tuition is paid for such pupils in state high schools. Since more than one seventh of the high-school enrollment in Minnesota is non-resident, and 7 high schools have more than 50 per cent of non-resident pupils,<sup>8</sup> it is evident that \$1 per month for the industrial subjects only is not enough to reimburse the district for its outlay for the education of non-residents. It should be said, however, that state aid was originally supposed to recompense the high school sufficiently for the instruction of these pupils.

The apportionment of money from the Current Fund for the benefit of classes for defectives is a type of special aid, except for two facts: (1) that the moneys are taken from the Current Fund and not from special appropriations, and (2) that it is

<sup>5</sup> *Session Laws of Minn.*, 1915 chap. 296 sec. 13 p. 418.

<sup>6</sup> *Ibid.*

<sup>7</sup> *High School Board Rules Relating to High and Graded Schools, May 1916* p. 41.

<sup>8</sup> *Ann. Rept. Minn. Inspector of State High Schools, 1917* p. 10.

<sup>a</sup> See Table III.

<sup>b</sup> See Table IX.



under the control of the state superintendent instead of that of the State High School Board.<sup>9</sup> Its effects are already apparent. Previous to the passage of this law in 1915, the only classes for such pupils were in the three cities of Minneapolis, St. Paul, and Hibbing.<sup>10</sup> In 1915 8 cities of the state maintained 35 classes for defective pupils.<sup>11</sup> Such special aid is directly in line with the best educational plans of the present time and may well serve as a type of what properly administered special aid can do.

Special state aid in Minnesota has been particularly directed towards the encouragement of new types of education or the improvement of the existing forms. The high school, graded school, and rural school have received state aid upon condition of maintaining certain standards. The new types of education fostered by state aid include: (1) agriculture, (2) home economics, (3) manual training, (4) commercial training, (5) teacher training, (6) consolidated schools.

Opinion appears to be unanimous in approving the effects of state aid to graded and high schools. R. A. Kent writes:

State aid to high schools in Minnesota has accomplished results highly commendable. It has caused high schools to increase in number rapidly. It has made it possible for the state to be extraordinarily well provided with secondary educational advantages in its small cities and villages. Requirements raised from time to time by a state board, with close inspection by an impartial, unattached professional agent of the board have given the state's system of high schools enviable rank.<sup>12</sup>

State aid to graded schools is generally regarded with favor. Kent writes:

Graded school aid has without doubt lengthened the school year, raised teaching efficiency, and bettered the physical conditions under which instruction is given in these schools.<sup>13</sup>

The total result of state aid to semi-graded and rural schools is of more doubtful value. On the one hand, it is true that the state money's disbursed have been spent in most cases for the betterment of these schools. No one familiar with neglected

<sup>9</sup> *Session Laws of Minn., 1915* chap. 194 p. 259.

<sup>10</sup> *Bienn. Rept. Minn. Dept. of Educ., 1915-16* p. 45.

<sup>11</sup> *Ibid.*

<sup>12</sup> R. A. Kent, *State Aid*, p. 54.

<sup>13</sup> *Ibid.* p. 61.

rural schools can fail to be impressed by the fact that every Minnesota rural school receiving state aid has complied in some measure at least with the State High School Board requirements, which include, among other things, a bubbling drinking fountain and a ventilating system. On the other hand there is reason to believe that the money for these improvements has come too easily to these districts. State moneys have been regarded as a substitute for, instead of a supplement to, the local revenue. Although the rural schools have improved in comparison with their own past condition, they have not improved in proportion to the amount of state aid given them.

Of their improvement, the state superintendent wrote in 1900:

In the rural and semi-graded schools progress and improvement in conditions and environment are equally noticeable. The average duration of the term of school in these schools is rapidly being lengthened. The average length of the term in country schools was lengthened by eight days last year.<sup>14</sup>

In 1916, the state superintendent wrote:

Rural schools have made notable progress. Of 7,409 schools, 6,517 [more than 87 per cent] are rendering a service that entitles them to special state aid. . . . Our rural schools, especially the 6,517 state-aided, are well equipped with heating and ventilating systems, good maps, globes, and slate blackboards, good desks, (many are single and adjustable), bubbling drinking fountains, good text-books and library books.<sup>15</sup>

On the other hand, some of the facts which tend to discredit state aid to rural schools are that: (1) it is distributed without sufficient state inspection or supervision;<sup>16</sup> (2) an increasing number of these districts are being enabled to maintain schools for so small a number of pupils that the expense is unreasonably great in comparison with other types of instruction;<sup>17</sup> (3) these districts furnish the poorest type of education offered in the state and make the smallest tax levies.

The objection that state aid to rural schools is administered without proper inspection or supervision has been made repeatedly by state reports.<sup>18</sup>

<sup>14</sup> *Rept. Minn. Supt. of Public Instr., 1899-1900* p. 16.

<sup>15</sup> *Rept. Minn. Dept. of Educ., 1915-16* p. 33.

<sup>16</sup> *Public Educ. Comm. Rept. to Governor, 1914* p. 19.

<sup>17</sup> R. A. Kent, *State Aid*, p. 90.

<sup>18</sup> *Rept. Minn. Supt. of Public Instr., 1905-06* p. 9.

The accusation that state aid is permitting, if not encouraging, the continuance of schools which are too small to insure the best results is a serious one. Kent points out that the "20 to 30" pupil school is the typical Minnesota rural school, and that the less-than-10-pupil school costs about two and one-half times per pupil what the typical school costs.<sup>19</sup>

During the last ten years the number of schools enrolling fewer than 10 pupils has increased from 252 to 432,<sup>20</sup> a gain of almost 100 per cent. The state superintendent of education writes concerning these schools:

It seems none too soon that these districts were automatically dissolved by law.<sup>21</sup>

And Kent writes:

By encouraging the maintenance of the dwarf rural school, by having attached to its bestowal no conditions regarding enrollment, local taxation, local assessed valuation and with extremely imperfect possibilities of checking whether the conditions presumed to be met, have been met, state aid as it is at present distributed to the rural schools of Minnesota acts positively as a barrier to the advancement of the best interests of these schools and their patrons.<sup>22</sup>

The third objection to the present mode of aiding rural schools is that special state aid as now distributed permits the rural districts at once to furnish the poorest educational opportunities and to make the smallest school-tax levy of any class of districts in the state. The fact that the quality of the school is poor would seem at first glance to be ample reason for state aid. The fact that the average tax levy in rural and semi-graded districts is uniformly less than in graded and high-school districts is evident from Table III. And Kent says of rural schools in Minnesota:

The influence of state aid is negative. Lower local school taxes accompany increases in state aid. So far as a special tax for school maintenance is a measure of local effort, state aid to rural schools has not been an incentive to such effort.<sup>23</sup>

All of these data point to the conclusion that the money from state aid has improved the equipment in rural schools. But the system has actually harmed the schools by making it

<sup>19</sup> R. A. Kent, *State Aid*, p. 90.

<sup>20</sup> *Rept. Minn. Dept. of Educ., 1915-16* p. 35.

<sup>21</sup> *Ibid.*

<sup>22</sup> R. A. Kent, *State Aid*, p. 91.

<sup>23</sup> *Ibid.*

possible to maintain "dwarf" schools, and by encouraging the growth of local indifference to the schools and their support.

There is no question whatever as to the failure of aid to rural schools for association. The state high-school inspector wrote in 1917:

As a state wide policy, association of rural schools with a central school as a means of improving the rural schools is not satisfactory. . . . Withdraw state aid for association and the entire fabric which has been building for eight years would fall to pieces. In few places has it brought lasting good to either party to the contract.<sup>24</sup>

In the growth of new types of education, the effects of the Annual Fund are evident. The six new types enumerated on page 85 have grown very rapidly since the granting of state aid. This encouragement of the introduction of new departments of instruction is one of the most important functions for state aid. Whether state support for such departments should continue after the subjects have become a recognized part of the school system is under debate at the present time. The action of the 1917 session of the legislature in ceasing to offer aid to districts on account of departments of domestic economy and manual training appears to indicate that aid is to be withdrawn from well-established departments. Certainly manual training and domestic economy are no longer new public-school subjects. In 1916-17 there was no high school in the state which did not offer one or the other. The most serious objection to withdrawing aid from them arises from the fact that no warning was given beforehand.

Teacher-training departments in Minnesota came into existence with the granting of state aid to them. The policy of the department in regard to them appears to be settled, and there is no reason to think that it will be changed soon.

Tables given in Chapter V show the growth in the number of agricultural and commercial departments which has resulted from each additional grant to districts offering these subjects in their schools.

Consolidated schools show unmistakable evidence of the result of state aid. After nine years of permission to districts to consolidate, the state superintendent wrote in 1910:

<sup>24</sup> *Ann. Rept. Minn. Inspector of State High Schools, 1917* p. 12.

Comparatively little progress in rural school consolidation has been made, and it seems certain that little will be, through the mere argument that better schools will follow.<sup>25</sup>

In 1911 aid was first granted to consolidated schools. Thirty-two schools received aid in 1912; this number was more than doubled in 1914, and more than quadrupled in 1916.<sup>c</sup> State aid had accomplished what agitation and encouragement could not do.

Of the success of consolidation in a typical district, the state high-school inspector writes:

Attention is called to the fact that one of this year's additions to the high school list, Villard, is a typical consolidated school. Organized only three years ago by the combination of seven rural districts with a two-room village school, Villard is today a well equipped, well administered, well taught graded school with a high school enrollment of forty-seven and a graduating class of four. Seven out of every nine pupils in this school are brought to the doors from country homes in transportation vans and, best of all, are taken back to these same country homes at the close of each day, to live the home life, to share the home cares with parents and to keep, through the four high school years, an abiding interest in the home which has nurtured them. To me this event is epochal. It tells plainly of the solution of the gravest problem of rural life.

It is worthy of note that seven other consolidated schools, also organized by the combination of rural districts and supported almost entirely by farming constituency, are nearing the high school rank and will soon be seeking admission to the list.<sup>26</sup>

A further purpose in the disbursement of special aid is the stimulation of local school support. For this purpose, the state grants to any district one third of the amount raised in that district by voluntary school tax above 20 mills. This appears to have had the greatest influence in districts supporting graded or high schools. Of the 224 districts supporting high schools, 102 levied a school tax of more than 20 mills for maintenance for 1916-17.<sup>d</sup> Three levied 50 mills or more; Fosston levied 51.3 mills for maintenance on a valuation of \$233,943.<sup>d</sup> It can not be said, however, that this state grant has entirely equalized educational burdens. In the same year that Fosston levied 51.3

<sup>25</sup> *Rept. Minn. Supt. of Public Instr., 1909-10* p. 12.

<sup>26</sup> *Rept. Minn. Inspector of State High Schools, 1915* p. 4.

<sup>c</sup> See Table XVI.

<sup>d</sup> See Table III.

mills on a valuation of \$233,943, Hibbing levied 1.1 mills on \$128,835,183. Clearly this provision is inadequate to equalize school opportunities or school burdens.

### NEEDED REFORMS IN SCHOOL SUPPORT

A history of school support is a history of attempted reforms in the method of supporting the public schools. This study opened with a survey of the present system of school support. It seems fitting that it should close with a brief statement of reforms now being urged by those connected with or interested in the public schools of Minnesota.

The writing of a new school code for Minnesota is not a simple matter. The present unsatisfactory one bears witness to the difficulty of the task. In 1912 the Minnesota Educational Association requested the legislature to appoint a commission to report a revised school code. The next year the legislature appointed such a commission, which reported in 1914.<sup>27</sup> The work of this commission was carried out in a thorough and scientific manner. Their report was brief and their recommendations sound. Succeeding sessions of the legislature, however, have entirely ignored their work. In 1917 Governor Burnquist appointed another commission to make recommendations in the same matter. No report from this commission is available at this time. The multiplying of commissions will do no good unless the state legislature at least weighs their suggestions. It is to be hoped that the present commission's report will be as excellent as that of the 1914 commission, and that it will have more influence upon legislation.

Three changes in the administration of the school system are so closely associated with the matter of school support as to deserve mention here. One of the most conspicuous reforms urged at the present time is the restoration of the county as the unit of taxation. As early as 1880 the state superintendent wrote:

In 1874 our legislature, not understanding the results of its action, dropped counties as the unit of taxation and distribution, and substituted petty school districts of which we have about 4,000, differing in size from six miles square to not over two sections. In these districts, . . . a rate of one mill is laid by the county commissioners, but the tax is returned not as formerly upon scholars, but to each district in the

<sup>27</sup> *Public Educ. Commission, Report to the Governor, 1914* p. 7.

exact amount which its property yields. . . . Thus with 4,000 different bases of taxation, ranging in valuation of property from poverty to abundant wealth, we have schools so diverse in numbers of scholars, length of terms and quality of teaching, that it seems ridiculous to call them a system.<sup>28</sup>

And the present superintendent of education, writing in 1916, says:

We have in Minnesota 7,980 school districts varying in size from two sections to several townships and with valuations ranging from 20,000 to several million dollars. Some districts are too poor to provide a good school under any conditions while others are so rich that a fraction of a mill pays the cost. These two districts may be in the same county, yes, lie adjacent to one another. There is neither hope nor justice in such a system. No scheme of state aid will ameliorate this condition. The only just system is the county as a unit for school support as well as for administration and supervision.<sup>29</sup>

It is generally agreed that the number of rural schools with fewer than ten pupils should be decreased. The state superintendent writes:

A growing cause for concern is the increasing number of schools with an enrollment too small for good work. . . . It seems none too soon that these districts were automatically dissolved by law.<sup>30</sup>

Where great difficulties of transportation or a growing population in a sparsely settled part of the state makes consolidation unwise, special provisions should be made.

In Indiana, the township trustees may 'discontinue and temporarily abandon all schools at which the average daily attendance during the last preceding year has been fifteen pupils or fewer;' they 'shall discontinue and temporarily abandon' schools whose daily average attendance has been twelve or less, though a majority of the patrons of the district may by petition reopen either.<sup>31</sup>

The third reform, which has long been urged, is that provision should be made for adequate supervision of rural schools.<sup>32</sup> This could be done by having the county superintendent appointed by the state on the basis of professional and educational qualifications and by providing for adequate assistance.

<sup>28</sup> *Rept. Minn. Supt. of Public Instr., 1879-80* p. 212.

<sup>29</sup> *Rept. Minn. Dept. of Educ., 1915-16* p. 35.

<sup>30</sup> *Ibid.*

<sup>31</sup> *Rev. Statutes of Indiana, 1914* sec. 6422. (Quoted here from Kent, *State Aid*, p. 81.)

<sup>32</sup> *Rept. Minn. Dept. of Educ., 1915-16* p. 35.

In the disbursement of the moneys of the Current School Fund, reform is very much needed. The requirements for participation in this fund should be sufficiently increased to exercise an influence upon the standards of the schools. Both the length of school term and days of attendance should be increased. Under the present system, the proceeds of the state 1-mill tax belong in part to the Current School Fund and in part to the special state aid. Therefore any change in the administration of those moneys would include the proceeds of the tax. The most pressing need in the administration of state aid at the present time is that the whole matter be put upon a scientific basis and freed from the uncertainties of politics and biennial appropriations. The money for state aid should be raised by increasing the state school tax.<sup>33</sup>

A general levy of four mills for the state's share in support of public schools would meet all requirement which the present law provides for on the part of the state.<sup>34</sup>

The first requirement for participation in special aid should be a minimum local tax levy. The state superintendent of education recommends 6 mills.<sup>35</sup> Probably this requirement should be made for participation in any form of state support, but it would be necessary to amend the constitution in order to make it apply to the Endowment Fund.

In conclusion it may be added that no mere patching of the system of school support will be adequate. The appointing of a commission on education is useless if its work is to be ignored. A clear knowledge of present conditions and a knowledge of scientific methods of school support are necessary for the formulation of salutary legislation. The generosity of Minnesota's school revenues and the importance of her educational system make the problem of school support one which deserves adequate study and a worthy solution.

<sup>33</sup> *Rept. Minn. Dept. of Educ. 1915-16* p. 33.

<sup>34</sup> *Ibid.* p. 24.

<sup>35</sup> *Ibid.* p. 33.



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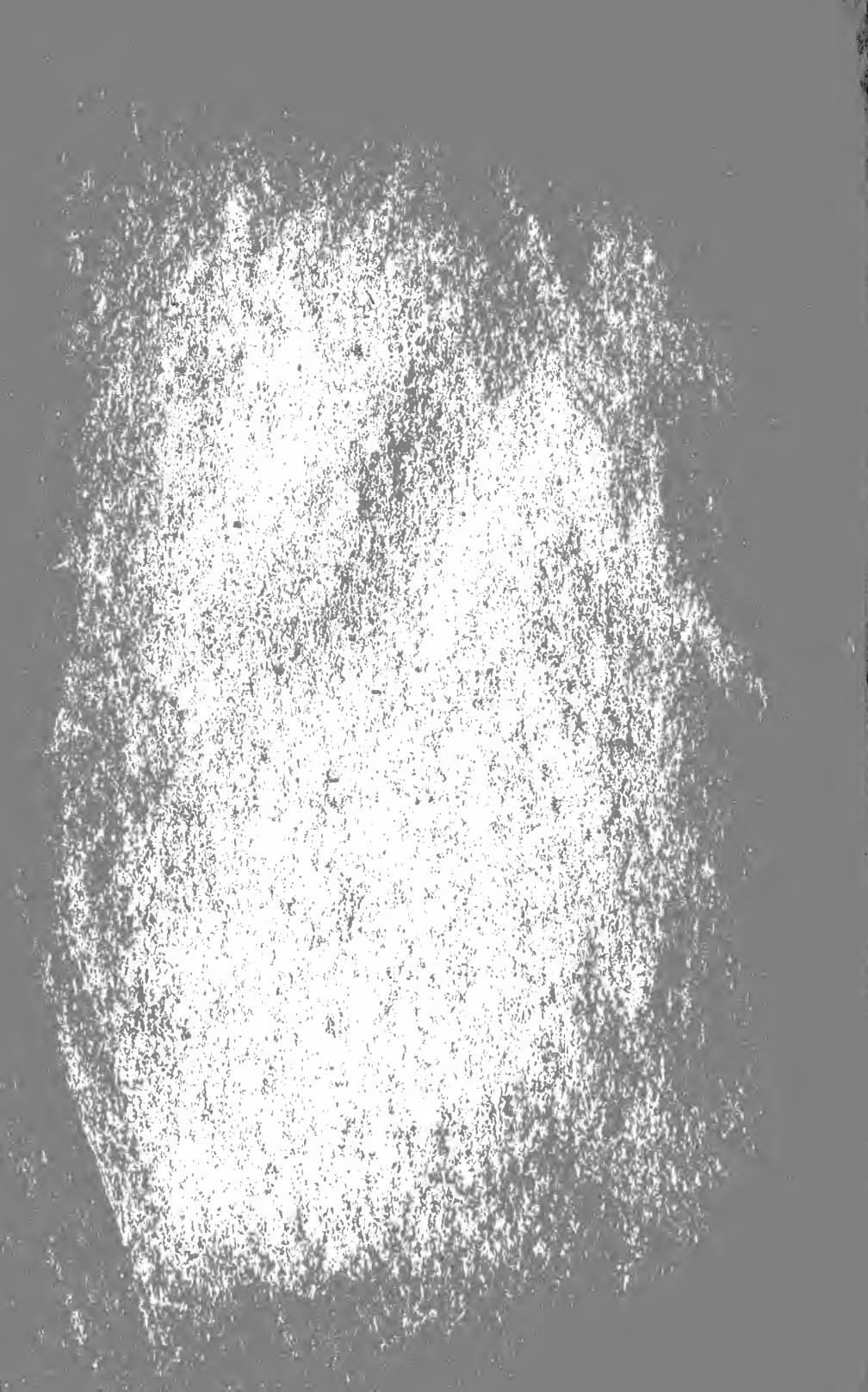
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A HISTORY OF THE TEACHING OF CHEMISTRY IN THE  
SECONDARY SCHOOLS OF THE UNITED STATES  
PREVIOUS TO 1850

BY

SAMUEL RALPH POWERS, M.A.



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## PREFACE

No less authority than Foster Watson is sponsor for the statement that the history of the study of Latin is the history of secondary education well into the nineteenth century. We have long known in a general way, at least, the factors which delayed the introduction of the natural sciences, but we have been sadly lacking in information as to when and how the natural sciences began their invasion of the curriculum. Mr. Powers has made a valuable contribution not only to the history of the teaching of chemistry, but to the general history of education. He has presented in a clear and interesting manner the many factors which brought chemistry into the foreground of social and intellectual interests and finally secured for it a place in the schools. In addition to the valuable data which his painstaking efforts have brought together, he has made clear the sequence of forces which are universally at work in bringing about changes in school curricula,—namely, new social and industrial needs; quests for new knowledge to meet these needs; rise of a new science (in this case, chemistry); efforts to gain for the new science a place in the schools; establishment of a new study; subsequent formalism and devitalization; efforts to rehumanize or revitalize the now thoroughly established and thoroughly respectable study, by teaching it in close relation to such concrete problems as originally led to its introduction. From this summary statement it is evident that Mr. Powers' study, though treating only one school subject and that for a comparatively brief period, will provide students of the history of education and students of secondary education not only with an explanation of many conditions and factors in the present educational situation, but also with the basis of an illuminating chapter in educational and social philosophy.

FLETCHER HARPER SWIFT,  
*Professor of Education*

COLLEGE OF EDUCATION  
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# A HISTORY OF THE TEACHING OF CHEMISTRY IN THE SECONDARY SCHOOLS OF THE UNITED STATES PREVIOUS TO 1850

## CHAPTER I THE BEGINNINGS OF CHEMISTRY IN THE UNITED STATES

The importance assigned to science subjects in the curricula of American secondary schools<sup>a</sup> prior to the middle of the nineteenth century has not been generally recognized. A writer on the history of education of no less prominence than Cubberley says of the American high-school curricula, "First to be introduced was history and English literature and then the modern languages. In the seventies and eighties came the sciences, first in book form and shortly afterwards as laboratory studies."<sup>1</sup> This same statement is made by Snedden in his article on "The Curriculum" (of the high school) in Monroe's *Principles of Secondary Education*.<sup>2</sup> Such a statement, although carrying with it the support of two eminent educators, is evidently based on a very incomplete knowledge of the facts. Any statement which implies that the sciences were excluded from the curricula of the American secondary schools previous to the middle of the nineteenth century does not correspond with the actual situation. From the facts to be presented in subsequent paragraphs, it will be evident that during the first half of the nineteenth century instruction in elementary science was prominently before the minds of educators; that science had gained a definite place in many secondary schools; that institutions devoted to the training of teachers of science had been established; that the foundation for instruction in science which had been laid during this earlier

<sup>1</sup> E. P. Cubberley, *High Schools*, Monroe's *Cyclopedia of Education* 3:267b.

<sup>2</sup> Mr. Snedden omits quotation marks and any reference to Cubberley, but evidently he felt that he could rely upon the historical accuracy of Cubberley, as the quotation which constitutes an entire paragraph is verbatim. Paul Monroe, *Principles of Secondary Education* p. 215.

<sup>a</sup> The term secondary school is used in this paper to include all schools offering instruction to pupils of adolescent age. See B. F. Pittenger, *Uses of the Term "Secondary" in American Education*, *School Review* 24:132.

period was a permanent one; and finally that the present courses in science in our high schools have been built upon these early foundations.

The problem of the present study is to discover when chemistry was first introduced into the secondary schools of the United States; to determine to what extent it became a general study of the secondary schools of the United States prior to 1850; and to discover the factors which have led to its wide introduction into the high schools of to-day. It is believed that the factors which contributed to the introduction and development of chemistry-teaching contributed to the introduction and development of the teaching of the other sciences also, and that they are in part typical of the factors which have led to the introduction of all other subjects which occupy a place in our high-school curriculum.

No complete record of the early history of American schools is available. Journals dealing primarily or incidentally with school matters were published early in the nineteenth century, and it is from such of these as are available that the material for this paper is largely taken. The (first) *American Journal of Education* edited by William Russell began publication in 1826. It was continued as *The American Annals of Education*, edited by W. C. Woodbridge, from 1831 to 1836. These journals are a most important source of information concerning education during the period of their existence. Bulletins and catalogs of courses of study issued by secondary schools, colleges, and universities serve as other important sources of information.<sup>b</sup>

In attempting to establish the time when instruction in chemistry began, it would, of course, be futile to look to a period of time earlier than the science itself. The status of chemical science at the close of the eighteenth century shows that at this time it was too embryonic to have secured a place in any of the secondary schools then in existence. It may be well to note here a few of the more important facts which support this contention.

The eighteenth century witnessed the decline of alchemy and the birth of chemistry. The experimental researches of Black (1728-99), Cavendish (1731-1810), Priestley (1733-1804), and Lavoisier (1743-94) demonstrated to the world the possibilities

<sup>b</sup> For complete list of material consulted see bibliography.

of chemical science. It is said that when, in 1755, Joseph Black graduated from the University of Edinburgh with the degree of M.D., "his thesis on *Magnesia Alba, Quicklime, and Other Alkaline Substances* contained the results of what is probably the first accurately quantitative examination of a chemical action which we possess."<sup>3</sup> The classic researches of Cavendish, Priestley, and Lavoisier on water and the gases of the atmosphere are, indeed, the foundation upon which the modern science of chemistry is built. Notwithstanding the fact that the science of chemistry made considerable progress during the latter part of the eighteenth century, Ernst von Meyer, in his *History of Chemistry*, says that at the beginning of the nineteenth century

there were practically no laboratories for general instruction in chemistry. In lectures upon physics, mineralogy, and anatomy, chemistry was relegated to a very subordinate place. . . . It is true that there were chairs of chemistry in various universities and colleges,<sup>6</sup> but the lectures on this subject were usually conjoined with those upon one of the subjects just named, in such a manner that chemistry was forced into the background.

In France, where toward the end of the eighteenth century it began to be perceived that instruction in natural science must be fostered by every means at command, a start was made before any other countries, in respect to the development of chemical study. Up till then apothecaries' shops were the only places where work in practical chemistry could be carried on, and there merely after certain prescriptions and not according to scientific methods.<sup>4</sup>

A statement made in 1790 by Joseph Priestley, the discoverer of oxygen, and a famous pioneer in chemical research, is indicative of the status of scientific subjects in England at this time. Priestley wrote, "I am very sorry to observe that natural science is very little, if at all, the subject of education in this country [England]."<sup>5</sup>

The status of chemical science in American universities at the opening of the nineteenth century is well expressed in an article in the *Medical Repository* for 1800, published at New York, under the caption *Liberal Decree of the Trustees of Columbia College with Respect to Chemistry*.

<sup>3</sup> Pattison M. M. Muir, *Heroes of Science--Chemists* p. 3.

<sup>4</sup> Ernst von Meyer, *History of Chemistry* (tr. by George McGowan) p. 642.

<sup>5</sup> Priestley, *On Air* 1:xxix. Quoted by Florian Cajori, *History of Physics* p. 289.

<sup>6</sup> The first professor of chemistry at Oxford (England) was appointed in 1683. The first professor of chemistry appointed at Cambridge (England) was officially appointed in 1702. Foster Watson, *The Beginnings of the Teaching of Modern Subjects in England* p. 232.

Notwithstanding it has been so long known that natural philosophy, or the science of experimental physics is divided into two great branches, the mechanical and the *chemical*, still the former which only treats of the more obvious and sensible properties of matter, has been taught in colleges and universities. The *latter* which is employed in ascertaining the laws which govern the composition and decomposition of material bodies, and scrutinizing more nearly the relations and affinities of their component atoms, has rarely or never entered the plan of what is termed a genteel or liberal education, but has been improperly considered as auxiliary to the medical profession.<sup>4</sup> The trustees of Columbia College have wisely corrected this error by determining at one of their late meetings that the study of the *chemical branch of physics* should precede the conferring of the degree of Bachelor of Arts upon the students of that seminary; of course the youths educated will have the advantage of becoming acquainted not only with natural philosophy, as it is commonly termed but also with chemistry. This is an example highly worthy of the imitation of other places of instruction.<sup>5</sup>

It appears, however, that there was at least one college that had preceded Columbia<sup>6</sup> in setting this example. John Maclean in his *History of the College of New Jersey* (Princeton) says that this institution made provision for academic instruction in chemistry as early as 1795, and makes the following claim for the priority of New Jersey College:

In the medical schools of Philadelphia, New York, and Cambridge in connection with the University of Pennsylvania and with Columbia and Harvard Colleges, there had been previously to Dr. Maclean's appointment as Professor at Princeton, lectures on Chemistry; but the above mentioned provision for the instruction of undergraduates in this branch of science was the first of the kind ever made in this country, unless possibly, Chemistry in connection with Natural Philosophy and as a branch of it may have been a subject of instruction at the college of William and Mary in Virginia, and the University of Pennsylvania at an earlier date.<sup>7</sup>

<sup>4</sup> *Medical Repository* for 1800, published at New York by Drs. Mitchell and Miller p. 205. Quoted in John Maclean's *History of the College of New Jersey* pp. 10-11.

<sup>5</sup> *History of the College of New Jersey* 2:8-9.

<sup>6</sup> The theory of iatro-chemistry developed by Paracelsus (1493-1541) and his followers accounts for the fact that chemistry was taught in the medical schools long before its value as a subject for study in a liberal system of education was recognized.

<sup>7</sup> Columbia had long been giving lectures in chemistry before the medical school. An account of the opening lecture before the medical school is well deserving of mention. "Dr. Smith, Professor of Chemistry gave an introductory lecture on that branch which for elegance and sublimity met with universal approbation." The lecture was given on the day following the opening of the medical school. Quoted from the *New York Mercury* of November 9, 1764, in *A History of Columbia University, 1754-1904* p. 301.



When Williams College at Williamstown, Massachusetts, was organized in 1785, the trustees made provision for the sciences "so far as it may be convenient," but it was not until the election of Professor Chester Dewey in 1812 that the first lectures on chemistry were given.<sup>8</sup>

A list of other colleges and universities which were giving instruction in chemistry during the early part of the nineteenth century together with the date when such instruction began is here given.<sup>†</sup>

TABLE I

BEGINNINGS OF CHEMISTRY AS A COLLEGIATE STUDY IN AMERICA

INSTITUTION	YEAR WHEN CHEM- ISTRY WAS FIRST INTRODUCED
Columbia College, New York City, N. Y. <sup>9</sup> .....	1767
University of Pennsylvania, Philadelphia, Pa. <sup>10</sup> .....	1769
Harvard College, Cambridge, Mass.....	1782
College of New Jersey (Princeton), Princeton, N. J. <sup>11</sup> .....	1795
University of Georgia, Athens.....	1800
Yale College, New Haven, Conn.....	1802
Bowdoin College, Brunswick, Me. <sup>12</sup> .....	1805
Union College, Schenectady, N. Y.....	1811
Brown University, Providence, R. I. <sup>13</sup> .....	1811
Hamilton College, Clinton, N. Y.....	1812
Williams College, Williamstown, Mass.....	1812
University of North Carolina, Chapel Hill, N. C.....	1818
Western University of Pennsylvania, Pittsburg, Pa.....	1819
Amherst College, Amherst, Me. <sup>14</sup> .....	1822
Dartmouth College, Hanover, N. H. <sup>15</sup> .....	1823
Trinity College, Hartford, Conn.....	1823-24
Hobart College, Geneva, N. Y.....	1825
Franklin College, New Athens, Ohio.....	1825
University of Virginia, Charlottesville, Va.....	1825

<sup>8</sup> Calvin Durfee, *History of Williams College* p. 354.

<sup>9</sup> *History of Columbia University, 1754-1604* p. 310.

<sup>10</sup> Frank W. Clarke, A Report on the Teaching of Chemistry and Physics in the United States. Bureau of Education: *Circular of Information No. 6* pp. 200-12.

All data in Table I was taken from this report unless other reference is indicated.

<sup>11</sup> *History of the College of New Jersey* 2:8-9.

<sup>12</sup> Nehemiah Cleaveland and Alpheus Spring Packard, *History of Bowdoin College* p. 8.

<sup>13</sup> *Historical Catalog of Brown University* p. 33.

<sup>14</sup> William S. Tyler, *History of Amherst College* p. 30.

<sup>15</sup> John King Lord, *History of Dartmouth College* p. 212.

<sup>†</sup> In some of these institutions the lectures in chemistry were open at first only to the students in the medical department. This list is probably incomplete.

Centre College, Danville, Ky.....	1826
St. Louis University, St. Louis, Mo.....	1827
Tusculum College, Tusculum, Tenn.....	1827
Indiana University, Bloomington, Ind.....	1828
Illinois College, Jacksonville, Ill.....	1829
Hanover College, Hanover, Ind.....	1829
Georgetown College, Georgetown, Ky.....	1830
University of Vermont and State Agricultural College, Burlington, Vt. ....	1830
University of Alabama, University, Ala.....	1831
Wesleyan University, Middleton, Conn.....	1831
Hiram College, Hiram, Ohio.....	1831
Randolph Macon College, Ashland, Va.....	1832
Wabash College, Crawfordsville, Ind.....	1833
Norwich University, Northfield, Vt.....	1834
Georgetown College, Georgetown, D. C.....	1834
Indiana Asbury University, Greencastle, Ind.....	1837
East Tennessee University, Knoxville, Tenn.....	1839
Emory and Henry College, Emory, Va.....	1839

From the foregoing survey it is clear that but little progress with the study of chemistry was made either in Europe or America previous to 1800; it would be futile therefore to search for chemistry in the American secondary-school curricula that were established previous to the beginning of the nineteenth century.<sup>g</sup>

While chemistry was struggling for recognition as a university subject of study, and even prior to the time when it was given recognition by the universities, its study was being promoted by other agencies. The simple spectacular reactions were sources of amusement for students in all walks of life, and chemistry became a favorite study with the seventeenth-century amateur. Anthony Wood says that in 1663 he and John Locke were members of a private chemistry class at Oxford: "The club wrote and took notes from the mouth of their master who sat at the upper end of the table."<sup>16</sup>

<sup>16</sup> Clark, *Life and Times of Anthony Wood* 1:472. Quoted in Adamson's *John Locke* p. 220 n.

<sup>g</sup> In 1827, of those colleges which offered instruction in chemistry very few if any offered more courses than are now commonly offered in our high schools. In the *Quarterly Journal of the American Educational Society* 1:228-32, is given a View of the Course of Study Pursued in Various Colleges in the United States, from Reports Gathered by the Editor. From the list of 20 colleges reported, only 11 offered instruction in chemistry. In 7 of these chemistry was taught only during the junior year, and in 3 only during the senior year. Only 1 offered as much as two years instruction in this subject.

The seventeenth century witnessed an extraordinary interest in scientific questions. This interest resulted in the establishment of scientific societies in all parts of Europe. Scientific papers were presented before these societies and the transactions of the societies were published. In this way information concerning scientific discoveries was disseminated. How widely and how synchronously the scientific interest spread over Europe during the seventeenth and early eighteenth centuries is shown by the following table.<sup>17</sup>

TABLE II  
EARLY SCIENTIFIC SOCIETIES<sup>18</sup>

SOCIETY	PLACE ESTABLISHED	DATE
Royal Society.....	London.....	(about) 1650
Accademia del Cimento.....	Florence .....	1657
Accademia Naturae Curiosorum....	Vienna .....	1652
Académie Royale .....	Paris .....	1666
The Berlin Academy.....	Berlin .....	1700
The St. Petersburg Academy.....	St. Petersburg.....	1725
The Stockholm Academy.....	Stockholm .....	1739
The Copenhagen Academy.....	Copenhagen .....	1743

An attempt has been made in the preceding pages to show something of the status of science in Europe and America in 1800. Immediately following 1800, interest in scientific study in America experienced a rapid growth. This fact makes the early decades of this century of especial interest in this paper. The evidences of this growth of interest in scientific study together with the causes which led to it will next be considered. The status of science in America during the eighteenth and early nineteenth centuries is well expressed in an unsigned article in the *American Monthly Magazine* for 1817 entitled, "Survey of the Progress and Actual State of Natural Science in the United States of America from the Beginning of the Century to the Present Time."<sup>19</sup> This article is of such value not only in showing something of the status of science in America in 1800, but also in giving an account of the rapid development of science between 1800

<sup>17</sup> The data included in this table is taken from Ernst von Meyer's *History of Chemistry* p. 108.

<sup>18</sup> *Ibid.*

<sup>19</sup> Unsigned article. Survey of the Progress and Actual State of Natural Sciences in the United States from the Beginning of the Century to the Present Time. *American Monthly Magazine* 2:81-89.

and 1817, that it deserves a rather extended summary.<sup>h</sup> The author begins by stating that the American contributions to science during the eighteenth century were slight compared with those of European countries. However, he names several Americans who had devoted some attention to the study of science. Among these were Winthrop, Franklin, Jefferson, and Priestley.<sup>20</sup>

The lack of interest in scientific study in America during the eighteenth century is evident from the fact that previous to 1800 no learned societies had been established which assumed the study of science as the basis of their labors. Certain societies established during this century did, however, include natural science within their range. The most important of these were:<sup>21</sup>

	FOUNDED
The Philosophical Society of Philadelphia.....	1744
The American Academy of Arts and Sciences, Boston.....	1780
The Connecticut Academy of Arts and Sciences, New Haven.....	1799

The first two decades of the nineteenth century witnessed a rapid growth in interest in science, and during this period scientific societies were established in many American cities. Among those established between 1800 and 1817 were:<sup>22</sup>

	FOUNDED
The Linnean Society of Philadelphia.....	1804
The Columbian Chemical Society of Philadelphia.....	1811
The Literary and Philosophical Society of New York.....	1814
The Literary and Philosophical Society of Charleston.....	1814
The Academy of Natural Sciences of Philadelphia.....	1815
The Cabinet of Sciences of Philadelphia.....	1815
The Lyceum of Natural History of New York.....	1817

These societies were interested chiefly in natural history, mineralogy, and geology. They founded museums of natural history and botanical gardens, and made mineral collections. Under their influence horticultural pursuits became so popular that they were considered fashionable.<sup>23</sup>

Evidence of rapid growth of interest in science following 1800 is gained when we learn that, of the more than forty colleges in

<sup>20</sup> Unsigned article. Survey of the Progress and Actual State of Natural Sciences in the United States from the Beginning of the Century to the Present Time. *American Monthly Magazine* 2:82.

<sup>21</sup> *Ibid.*

<sup>22</sup> *Ibid.*

<sup>23</sup> *Ibid.* p. 83.

<sup>h</sup> The summary which begins at this point continues through page 120. It will of course, be understood that the data cited are all from this article.

existence in 1817, all taught natural philosophy, some taught chemistry, and a few taught natural history.<sup>24</sup> In the universities all these branches had professors in 1817. How inadequate and superficial much of this work in the universities was is evident from the statement that professors were sometimes appointed "who have yet to learn what they are to teach."<sup>25</sup>

Men from all walks of life were interested in scientific study. The pursuit of scientific study was, in fact, a popular pastime for the leisure hours of men in many different professions. Physicians most prominently devoted themselves to science and did most of the teaching. Next to the physicians the clergy contained the greatest number of scientists. But there were also scientists of some note among the merchants, gentlemen of the navy, lawyers, and wealthy citizens. Among those of greatest prominence in the field of chemistry were Doctors MacNeven, Priestley, Dexter, Silliman, Mitchell, Coxe, Cutbush, Seybert, Gorham, and Messrs. Cooper, Hare, and Griscom.<sup>26</sup>

These men of science made many discoveries. It is stated that American

chemists and mineralogists discovered many substances hitherto [1817] not detected in North America and even some new substances; they verified the European discoveries and in a few instances anticipated them in some measure; mineral waters, metallic substances, and fossil bodies were analyzed; some improvement in nomenclature, apparatus, and experiments were introduced; and experimental chemistry was eagerly taught to all classes of society.<sup>27</sup>

The rapid growth of interest in science in America was soon recognized by Europe. William McClure, Esq.,<sup>1</sup> wrote in a letter to the editor of *The American Journal of Science*, dated at Madrid, December 4, 1821:

I am glad to hear of the rapid progress science in general, (and mineralogy and geology in particular) makes in the United States. The men

<sup>24</sup> Unsigned article. Survey of the Progress and Actual State of Natural Sciences in the United States from the Beginning of the Century to the Present Time. *American Monthly Magazine*. 2:82.

<sup>25</sup> *Ibid.* p. 84.

<sup>26</sup> *Ibid.* pp. 86-89.

<sup>27</sup> *Ibid.*

<sup>1</sup> William McClure (1763-1840) was the first American disciple of Pestalozzi. He retired from business in 1803, and in 1806 wrote the first article published in America on Pestalozzianism. He studied in Europe with Pestalozzi and Fellexberg. In 1824 he joined Robert Dale Owen at New Harmony, Indiana, and invested \$150,000 in Owen's utopian colony there. Mr. McClure was active in many scientific societies and a prolific writer. W. S. Monroe, McClure, William, *Cyclopedia of Education* 4:104.

of Science in Europe are astonished at the rapidity with which one discovery succeeds another and cannot conceive, how, in so short a time, so many hands and heads are occupied with the exact sciences and mechanics.<sup>28</sup>

In 1826 it is called to our attention by Isaac Lea that the study of natural history has within the last thirty years engaged much more general attention than at any previous period.<sup>29</sup>

And again we read that,

So rapid has been the progress of chemical science during the last ten or fifteen years, [1826] that our older scholars frequently complain, that it has passed almost out of their field of view.<sup>30</sup>

Paralleling and stimulating the growth in scientific interest in chemical phenomena there developed increasing recognition of possible applications of chemistry to manufacturing pursuits and to agriculture. In spite of the fact that not much progress was made in applying chemistry to industry and agriculture, the possibility of such applications was continually referred to in the literature, even from the beginning of the nineteenth century. This recognition, together with the incessant demand for the practical in education, must have been a considerable factor in influencing the schools to include chemistry and other natural-science subjects in their curricula. The possibility of extensive application of chemistry to industry was expressed in 1815. It was said that chemistry was

an important aid to the study of mineralogy, pharmacy, electricity, cooking, metallurgy, and in various manufacturing industries, especially glass, leather, soap, paint, glue, starch, etc. . . . In fact it would be an easy task to continue almost indefinitely the list of arts whose processes, if they admit of explanation at all, must be explained upon the principles of chemical philosophy.<sup>31</sup>

As early as 1811 organized effort had been made to promote scientific agriculture. *The Memoirs of the Philadelphia Society for Promoting Agriculture* for 1811 recognized the possible application of chemistry to the maintenance of soil fertility. It included articles on the use of lime, gypsum, leached ashes, and salt

<sup>28</sup> Extract of a letter from William McClure, *American Journal of Science* 5:197.

<sup>29</sup> Isaac Lea, On the Pleasures and Advantages of Studying Natural History, *American Journal of Science* 11:218.

<sup>30</sup> Denison Olmstead, On the Present State of Chemical Science, *American Journal of Science* 11:349.

<sup>31</sup> An essay of the Classification, Mutual Relations, and Various Uses of the Physical Sciences. (Unsigned.) *Analectic Magazine* 6:145.

as materials for fertilization, and lamented the lack of more exact knowledge on the use of these substances.<sup>32</sup> Early students of scientific agriculture looked to chemistry to supply this exact knowledge, but apparently little progress was made with agricultural chemistry during the first half of the century. In 1841 it was said that

although the science of Agriculture had a vigorous commencement in the labors of Davy and Chaptal, yet its subsequent progress had not been correspondingly rapid and it must yet be regarded as in its infancy.<sup>33</sup>

As regards industrial chemistry, the records show that there were some applications of chemistry made to industry at a very early date, but manufacturing based upon applications of chemistry has only recently become an important phase of industry in the United States.<sup>1</sup> As late as 1870, when the value of manufactured chemical products in France was \$250,000,000, the total value of American chemical products, including fertilizers, was but \$25,217,000.<sup>34</sup>

<sup>32</sup> *Memoirs of the Philadelphia Society for Promoting Agriculture*, containing communications on various subjects in husbandry and rural affairs. 2. 1811. An extensive review of these memoirs is given in the *American Review* 2:78-101.

<sup>33</sup> Edward Hitchcock, First Anniversary Address before the Association of American Geologists at the Second Annual Meeting in Philadelphia, April 5, 1841. *American Journal of Science* 41:262.

<sup>34</sup> Albert S. Bolles, *Industrial History of the United States* p. 489.

<sup>1</sup> Dr. John Pennington in *Chemical and Economical Essays*, 1700, described a process for the manufacture of Prussian blue. Recorded in *Mease's Archives* 3:129 and cited by J. L. Bishop, *A History of Manufactures in the United States* 2:262 n. John Harrison was fully established in the manufacture of oil of vitriol in 1806, and in 1807 produced 425,000 pounds. S. Wetherill and Sons, Farr and Kunzi (later known as Powers and Weightman), and the House of Kalbfleisch and Sons were three prominent American chemical manufacturing establishments which began operations between 1820 and 1830. For a detailed account of the early history of chemical industry in the United States, see *A History of Manufactures in the United States* 3:73-77.

## CHAPTER II

### BEGINNINGS OF CHEMISTRY IN AMERICAN SECONDARY SCHOOLS—THE ACADEMY

Before we can enter intelligently upon the discussion of the beginnings of chemistry in American secondary schools, we must give some account of that type of secondary school, the academy, which was the first to give science and particularly chemistry a place in its curriculum.

A study of the educational situation in the United States in the early part of the nineteenth century shows that there were several types of schools making bids for places in the educational system. The earliest of these was the Latin-grammar school. The first Latin-grammar school was founded in Boston in 1635.<sup>1</sup> The next dominant type was the academy. Finally the high school came into existence. During the later part of the eighteenth, and the earlier part of the nineteenth, centuries, agricultural, industrial, and scientific schools were founded in many places in the United States. As early as 1780 the state of Massachusetts had aimed to encourage, by rewards and immunities, private societies and public institutions to provide schools for the promotion of agriculture, arts, sciences, commerce, trades, and manufacturing.<sup>2</sup>

The earliest type of American secondary schools, the Latin-grammar school, gave no place to the teaching of chemistry, nor indeed to that of any other natural science. The reason for this is to be found in the fact that its curriculum was consciously modeled after that of the European Renaissance classical schools. The aim of these Renaissance classical schools was to produce boys capable of speaking, reading, and writing classical Latin correctly and fluently. The realization of such an aim left little time for anything else, and made their curriculum impervious to the influence of the great scientific movement going on about them. The curriculum of the Latin-grammar school was distinctly designed to meet the needs of the professional and aristocratic

<sup>1</sup> Second report of the Record Commissioners of the city of Boston, pp. 4-5, quoted by E. E. Brown, *The Making of Our Middle Schools* p. 35 n. 1.

<sup>2</sup> Palmer C. Ricketts, *History of Rensselaer Polytechnic Institute* p. 4.



classes. It offered no satisfactory education for the great mass of American youths who were not preparing for college. American statesmen were among the first to deplore this deficiency in education, and very early began to make demands for a more liberal and extensive system.

One of the first to point out the need for instruction of all the people in the practical applications of the sciences was Benjamin Franklin. In like manner Thomas Jefferson, in his plan for a state university written about 1816, proposed a school of technical philosophy, to be maintained wholly at public expense, where certain of the higher branches should be taught in abridged form to meet certain practical needs. To such a school, he wrote,

will come the mariner, carpenter, shipwright, pumpmaker, clock-maker, machinist, optician, metallurgist, founder, cutler, druggist, brewer, vintner, distiller, dyer, painter, salt-maker, glass-maker, to learn, as much as shall be necessary to pursue their arts understandingly, of the science of geometry, mechanics, statics, hydrostatics, hydraulics, hydrodynamics, navigation, astronomy, geography, optics, pneumatics, acoustics, physics, chemistry, natural history, botany, mineralogy, and pharmacy.<sup>3</sup>

It was to meet this demand for a type of education suited to the need of a larger public than that served by the Latin-grammar school that the American academy arose. It was in 1749 that Benjamin Franklin made public his proposal to establish an academy which would provide instruction in "those things that are likely to be most useful and most ornamental." The academy movement spread quite rapidly over the United States following the War of Independence. Winterbotham's *View of the American United States*,<sup>4</sup> written in 1795, gives some facts concerning the state of secondary education at that time. He makes special mention of certain academies in each of the original thirteen states. The statements concerning academies in Virginia indicate clearly that there were others in existence than those mentioned. He said: "There are several academies in Virginia; one at Alexandria, one at Norfolk, and others in other places." From his statements the material in the following table was compiled. This

<sup>3</sup> *Early History of the University of Virginia as Contained in the Letters of Thomas Jefferson and J. C. Cabell*. Edited by J. W. Randolph, Richmond, 1856. Quoted in *The History of Rensselaer Polytechnic Institute* p. 5.

<sup>4</sup> W. Winterbotham, *An Historical, Geographical, Commercial, and Philosophical View of the American United States, and of the European Settlements in America and the West Indies*. The material given here is compiled from quotations from this work given by *The Making of Our Middle Schools* pp. 199-202.

table is by no means exhaustive, since it gives merely the number of academies specially mentioned in Winterbotham's account.<sup>5</sup>

New Hampshire.....	6	Maryland .....	1
Massachusetts .....	6	Virginia .....	3
Maine .....	4	North Carolina.....	5
Rhode Island.....	1	South Carolina.....	4
Connecticut .....	5	Georgia (Provision had been made	
New York.....	8	for an academy in each county)	
Pennsylvania .....	6		

The Regents of New York University reported in 1827 that there were 45 incorporated academies in New York State giving instruction to 3,050 students.<sup>6</sup> And by 1840 there had been established in North Carolina as many as 118 academies.<sup>7</sup> In a "partial list" of the academies of West Virginia published by Thomas A. Miller, state superintendent, are given the names of 17 academies founded earlier than 1830, and 45 founded earlier than 1850.<sup>8</sup> It was in the academy that chemistry first secured a place as a secondary school subject.

That it was the aim of the academies to furnish a practical education is shown by the very extensive list of subjects in their curricula. Something of the character of the students resorting to the academy and the extensiveness of the curriculum may be gleaned from a statement contained in a lecture delivered by William C. Fowler<sup>9</sup> in 1831. He said, students

repair to the academy or high school for one or two quarters and sometimes longer, to complete their education. . . . [They] comprise those who have become acquainted with the common branches of school education; and who go to the higher institutions to add a knowledge of some of the higher branches, to polish off their learning and prepare themselves to be teachers, or for some of the professions of active life. Having much to learn, and but little time, besides reviewing English grammar, arithmetic, and geography, they wish to study natural philosophy, rhetoric, composition, logic, astronomy, perhaps surveying, and by all means chemistry, and may be several other branches. . . .<sup>10</sup>

<sup>5</sup>*An Historical, Geographical, Commercial, and Philosophical View of the American United States, and of the European Settlements in America and the West Indies*. The material given here is compiled from quotations from this work given in *The Making of Our Middle Schools* pp. 199-202.

<sup>6</sup>Extract from The Report of the Regents of New York University for 1827, *American Journal of Education* 3:327.

<sup>7</sup>Charles L. Owen, *Progress of the North Carolina Historical Commission, North Carolina Schools and Academies 1790-1890. A Documentary History*. The 118 academies are listed in the index.

<sup>8</sup>Thomas A. Miller, *History of Education in West Virginia* pp. 37-38.

<sup>9</sup>William C. Fowler, *Influence of Academies and High Schools on Common Schools. Introductory Discourses and the Lectures Delivered before the American Institute of Instruction, in Boston, August, 1831* pp. 193-94.

<sup>10</sup>William C. Fowler was a professor in Middlebury College, Middlebury, Vermont.

As might be expected, the development of the academy movement carried with it marked hostility to the traditional secondary-school curriculum. Some supporters of the academy movement appear almost fanatical in their opposition. In 1803, Representative O'Farrell introduced into the legislature of the state of North Carolina a "Bill To Establish Academies in Each County." The bill (which failed to pass) provided that

the course of education to be established in said academies shall consist of the study of the English Language, writing, arithmetic, mercantile book-keeping, geometry, trigonometry, mensuration or surveying, navigation, geography, natural and experimental philosophy, and the laws of North Carolina.

The bill provided further

that the study of the dead languages as being useless in a republican form of government and a great waste of time shall form no part of the course of education of the sciences.<sup>10</sup>

Representative O'Farrell's conception of the purpose of the academies in the American educational system was no doubt in substance the same as that of many of the educators of the time. The general conception was that the purpose of the academy was to prepare the American youths to fulfil their responsibilities as democratic citizens. It was felt that there should be provided not only instruction which would prepare students for college, but also instruction which would fit the larger group of students, not preparing for college, to gain their livelihood by work in the trades and industries. In addition to these two aims some of the academies attempted to realize a third, namely, to provide courses of study similar to those offered by the colleges and universities. The importance of the academy as a connecting link between the common school and college is well shown by such statements as the following taken from a lecture already quoted by William C. Fowler. He said:

The Academies have a direct influence on the college, inasmuch as they furnish them with a large part of their students; and upon the common schools since they supply them with a considerable number of teachers. And it is through them that the lads must pass in their ascent to the colleges.<sup>11</sup>

<sup>10</sup> *Unpublished Legislative Documents, 1803*. Charles L. Coon, *Publications of the North Carolina Historical Commission; Public Education in North Carolina. A Documentary History* p. 46.

<sup>11</sup> *Influence of Academies and High Schools on Common Schools. Introductory Discourses and the Lectures Delivered before the American Institute of Instruction in Boston, 1831* pp. 183-87.

The primary importance of the academy from the standpoint of this paper is that it was the academy which first fostered the teaching of chemistry to adolescents. Something of the extent to which chemistry was included in the curriculum of the academy is shown in Table III.<sup>b</sup>

TABLE III	
ACADEMIES AND OTHER SECONDARY SCHOOLS TEACHING CHEMISTRY	
INSTITUTIONS	CHEMISTRY TAUGHT AS EARLY AS
North Carolina <sup>12</sup>	
Hassam Private Academy.....	1819
Greensboro Academy .....	1821
Andrews and Jones North Carolina Female Academy, Oxford..	1822
Forest Hill Academy near Raleigh.....	1823
Raleigh Academy .....	1823
Hillsborough Female Academy.....	1825
Charlotte Female Academy, Catawba.....	1826
La Vallee Female Academy, Halifax.....	1826
Tarborough Academy .....	1826
Bingham's Military School, Oxford.....	1830
Berkeley's Literary and Scientific Institute for Young Ladies....	1831
Kerr's Male and Female School, Raleigh.....	1831
Bowen's School, Raleigh.....	1831
Mulock's English School, Wilmington.....	1837
Vine Hill Academy.....	1837
Grove Academy, Wilmington.....	1840

<sup>12</sup> *Publications of the North Carolina Historical Commission. North Carolina Schools and Academies 1790-1840. A Documentary History.* See index for references to each of the North Carolina institutions here listed.

<sup>b</sup> It has been possible to gather some information concerning the subjects taught in certain of the early American academies. The North Carolina Historical Commission has made a very exhaustive study of the North Carolina schools and academies from 1790 to 1840. Their report of this study includes many reproductions of original advertising material, reproductions of courses of study, daily programs, and other material. The accessibility of this material accounts for the relatively large place given to the schools of North Carolina. The condition of education in North Carolina may or may not be typical of conditions in other states. Other information concerning the subjects taught in the early academies was gathered from the files of early American educational journals, and from a report of a questionnaire survey conducted by F. W. Clarke under the direction of the United States Bureau of Education. Mr. Clarke's questionnaire was sent to schools all over the United States. The schools were asked, among other things, to state in what year the institution began giving instruction in chemistry. In Table III (pp. 16-17) has been listed by states a number of academies which were known to have provided instruction in chemistry at an early date. Much of the information in this table has been taken from school announcements for a particular year. The fact that chemistry was included in the course of study for a given year is evidence only that chemistry was taught as early as that year, but gives no clue to how much earlier it may have been taught. The lists for New York, Massachusetts, and Connecticut are probably far from complete. The difficulties in the way of securing such information as that given here prohibited the further extension of this list.

Massachusetts	
Wesleyan Academy, Willbraham <sup>13</sup> .....	1826
Chauncy Hall School, Boston <sup>14</sup> .....	1828
Phillips Academy at Andover <sup>14</sup> .....	1830
Ipswich Female Seminary <sup>15</sup> .....	1833
West Newton English and Classical School <sup>14</sup> .....	1848
Connecticut	
Emerson Female Seminary, Wethersfield <sup>15</sup> .....	1826
New Haven Gymnasium <sup>16</sup> .....	1827
Greenwich Academy.....	1829
Hartford Female Seminary <sup>17</sup> .....	1832
New York	
Onondaga Academy <sup>14</sup> .....	1813
Clinton Grammar School <sup>14</sup> .....	1815
Hartwick Seminary <sup>14</sup> .....	1815
Albany Academy <sup>18</sup> .....	1822
Troy Female Academy <sup>19</sup> .....	1822
Gouverneur Wesleyan Academy <sup>14</sup> .....	1830
Delaware Academy, Delhi <sup>14</sup> .....	1830
Rochester Female Academy <sup>14</sup> .....	1837
Gilbertsville Academy and Collegiate Institute <sup>14</sup> .....	1840
Red Creek Union Seminary <sup>14</sup> .....	1840

In the table here given there are 4 academies which gave instruction in chemistry previous to 1820, 15 that began such instruction not later than the period of 1820-29, and 14 that began not later than the period between 1830-40.

The Onondaga Academy (New York), which gave instruction in chemistry to its students as early as 1813, is probably one of the first academics in the United States to provide such instruction.<sup>c</sup> Some light upon the importance of chemistry in the

<sup>13</sup> *American Annals of Education* 1:187.

<sup>14</sup> A Report on the Teaching of Chemistry and Physics in the United States. Bureau of Education: *Circular of Information*, No. 6, pp. 176-92.

<sup>15</sup> *American Annals of Education* 3:76.

<sup>16</sup> S. E. Dwight and H. E. Dwight, Prospectus of the New Haven Gymnasium. *American Journal of Science* 13:385-86.

<sup>17</sup> *American Annals of Education* 2:65.

<sup>18</sup> *American Journal of Education* 1:506.

<sup>19</sup> Amos Eaton, *Chemical Instructor: Presenting a Familiar Method of Teaching the Chemical Principles and Operations of the Most Practical Utility to Farmers, Mechanics, Housekeepers, and Physicians; and Most Interesting to Clergymen and Lawyers. Intended for Academies and for the Popular Class-Room* p. 3 n. This work is referred to hereafter as the *Chemical Instructor*.

<sup>c</sup> John Griscom taught chemistry to his more advanced students in the common school over which he had charge at Burlington, New York, as early as 1806. An account of Griscom's work is given below. See page 24 ff.

course of study, as well as upon the methods used in teaching it, may be gleaned from the following statements made in the announcements from which the data in the above Table III are taken.<sup>d</sup>

An advertisement in the *Raleigh* (North Carolina) *Register* under date of March 23, 1827, setting forth the claims of the Oxford Female Academy reads:

Since the commencement of the session we have received a Chemical and a Philosophical Apparatus and now each recitation in Chemistry, Philosophy, and Astronomy, is accompanied with a Lecture and Experiments illustrating the principles of these sciences.<sup>20</sup>

From an advertisement setting forth the claims of the Warrenton Female Academy, we learn that

an extensive apparatus for Natural Philosophy and Chemistry were constantly used in teaching those branches which require their aid, affording facilities not possessed by any other Female Seminary in the United States.<sup>21</sup>

According to the announcement of the Wesleyan Academy at Wilbraham, Massachusetts, that institution gave lectures and experiments on chemistry as applied to the useful arts.<sup>22</sup> Continuing our study of these school announcements we learn that the Mount Hope Literary and Scientific Institution at Baltimore, Maryland, which admitted pupils of from four to sixteen years of age gave instruction in chemistry as applied to the arts, agriculture, and mineralogy;<sup>23</sup> that in the New Haven Gymnasium, a school for the education of boys,

students not intending for college who have been sufficiently long in the course of education and have made the requisite attainments will be permitted to attend the course of lectures on chemistry, mineralogy and geology given by Professor Benjamin Silliman;<sup>24</sup>

and also that the Adams Female Academy at Derry, New Hampshire, was furnished with a good chemical laboratory.<sup>25</sup>

<sup>20</sup> *Raleigh Register*, March 23, 1827. Quoted in *Publications of the North Carolina Historical Commission. North Carolina Schools and Academics 1790-1840. A Documentary History* pp. 156-57.

<sup>21</sup> *The (Warrenton) Star*, December 8, 1820. Quoted in *Publications of the North Carolina Historical Commission. North Carolina Schools and Academics 1790-1840. A Documentary History* p. 447.

<sup>22</sup> *American Journal of Education* 1:187.

<sup>23</sup> *Ibid.* 3:620.

<sup>24</sup> Prospectus of the New Haven Gymnasium; a School for the Education of Boys, *American Journal of Science* 13:385.

<sup>25</sup> *American Annals of Education* 2:147.

<sup>d</sup> School advertisements are probably unreliable. For this reason the importance of the following quotations should probably be discounted.

In the preparation of this study much effort has been made to gather material like that just given, but for no state except North Carolina is material available which makes possible anything approaching an exhaustive study. There is certainly no reason to believe that the academies of North Carolina gave more attention to teaching chemistry than the academies of the other states, but rather that the conditions there were typical of what would be found in the other states if studies comparable to those of the North Carolina Historical Commission were made.

Further evidence that chemistry was taught in the academies as widely as the available statistics indicate is gained from the preface of Amos Eaton's<sup>e</sup> *Chemical Instructor*, written in 1822, in which he apologizes for having prepared another textbook for use in the academies when there were already so many books of this kind available.<sup>26</sup> And in an analysis of the course of study given by Chester Dewey, Principal of the Pittsfield, Massachusetts, Gymnasium, before the meeting of the American Lyceum, in 1833, he stated that the least instruction intended to be given in any of the common schools is reading, spelling, and writing. In the next higher grade of school, there is given a partial knowledge of English grammar, and of the elementary rules of arithmetic, with a very little geography. In the next grade all these branches are studied to much greater perfection and extent, and perhaps some history is read. In the highest of the common schools, and in some select schools, are taught rhetoric, some philosophy and chemistry, arithmetic fully, and some Latin and Greek. The academies and higher grammar and select schools pursue all these studies.<sup>27</sup>

From the same sources which have furnished us with evidence as to the extent to which chemistry was taught, we may also gain information concerning the methods used. The method advocated by those most prominent in the work of teaching chemistry was

<sup>26</sup> *Chemical Instructor* p. 2.

<sup>27</sup> Chester Dewey, *Natural Science in Common Schools. American Annals of Education* 5:304.

<sup>e</sup> Amos Eaton was senior professor at Rensselaer from 1824 to 1842. (W. S. Monroe's statement that he was president of Rensselaer, made in a biographical sketch of Amos Eaton in the *Cyclopedia of Education*, is in error.) During his stay at Rensselaer he devoted much attention to the training of science teachers. The prominence which he achieved as a teacher shortly after the publication of the *Chemical Instructor* makes the many ideas expressed here concerning equipment, content, and method for the work of teaching chemistry especially significant. See below, p. 47 ff.

that of giving lectures accompanied by experimental demonstrations. One school announcement states that each recitation in chemistry is accompanied by a lecture and experiments illustrating the principles.<sup>28</sup> Another states that

an extensive apparatus for Natural Philosophy and Chemistry were constantly used in teaching those branches.<sup>29</sup>

Another, according to its announcement, gave lectures and experiments on chemistry.<sup>30</sup> In another

a neat and well selected apparatus together with a handsome cabinet of minerals facilitated the task of instruction in the several studies of Chemistry, Natural Philosophy, and Mineralogy.<sup>31</sup>

Again,

the Lectures on Chemistry were illustrated by the best apparatus the incipient state of the institution will afford.<sup>32</sup>

It is difficult to determine just how much use was made of the laboratory by the pupils, but probably not very much. Amos Eaton advocated that the pupils be required to handle the apparatus in order that they might better understand the experiments afterwards to be performed by the instructor.<sup>33</sup> Laboratory equipment was difficult to procure. Amos Eaton, in his book just referred to, gave directions for making or borrowing from a druggist most of the apparatus required for the experiments outlined in his text. Larger pieces of apparatus when desired were ordered from England. The problem of equipment was certainly one which contributed in no small degree to the difficulties which stood in the way of efficient instruction.

The existence of elementary textbooks was unquestionably essential to the promotion of instruction in chemistry in the academies. This was especially true since there was, during this period of pioneering, a shortage of qualified chemistry teachers.

<sup>28</sup> *Raleigh Register*, March 23, 1827. Quoted in *Publications of the North Carolina Historical Commission. North Carolina Schools and Academies 1790-1840. A Documentary History* pp. 156-57.

<sup>29</sup> *The (Warrenton) Star*, December 8, 1820. Quoted in *Publications of the North Carolina Historical Commission. North Carolina Schools and Academies 1790-1840. A Documentary History* p. 447.

<sup>30</sup> *American Journal of Education* 1:187.

<sup>31</sup> *Raleigh Register*, December 16, 1830. Quoted in *Publications of the North Carolina Historical Commission. North Carolina Schools and Academies 1790-1840. A Documentary History* p. 305.

<sup>32</sup> *Ibid.* p. 564.

<sup>33</sup> *Chemical Instructor* p. 9.



It is probably more than a coincidence that three of the elementary textbooks listed below were written in 1822. In Table III are listed eleven academies which began giving instruction in chemistry not later than the period between 1822 and 1826. These two facts point to the conclusion that the decade of 1820 to 1830 witnessed a rapid growth in the extension of chemistry as a secondary-school subject.

An attempt to determine the number of textbooks in use during a given period is just as impossible as to determine how many schools included chemistry in their curricula. There are listed below eight elementary texts in chemistry which appeared between 1822 and 1833. In addition to these there were twenty or more other chemistries which had been written for use in the colleges. It is highly probable that a considerable number of these college texts were also used in the academies.

Monroe, discussing the use of textbooks in science in the United States, says that "by 1832 there were 39 geographies, 11 astronomies, 6 botanies, 5 chemistries, and 6 natural philosophies. Most of these were designed for use in the academies."<sup>24</sup> It is difficult to understand why Monroe would make such a definite statement as this when it is clearly impossible to state the exact number of books that were in use during this period.<sup>f</sup> We can say that there were at least as many in use as we can find record of, but we can have no assurance that we have record of all. Again, the error in this statement is evident, for we have listed below the names of 8 books written or revised in America and in use in American secondary schools, 7 of which appeared previous to 1832.

The list of books here given includes only those which were written specifically for use in the secondary schools.

*The Chemical Instructor*,<sup>25</sup> written in 1822 by Amos Eaton, was "intended for academies and the popular classroom."<sup>g</sup> This book in comparison with those used in the colleges was quite brief and elementary.

<sup>24</sup> Paul Monroe, *A Brief Course in the History of Education* p. 365.

<sup>25</sup> *Chemical Instructor* p. 3.

<sup>f</sup> This statement of Professor Monroe typifies the lack of accurate information concerning this period of American education.

<sup>g</sup> A copy is in the library of the University of Minnesota.

*An Introduction to Chemistry*, with practical questions, designed by John R. Cotting for beginners in the science, was written in 1822.<sup>36</sup>

*A Grammar of Chemistry*,<sup>h</sup> "adapted to the use of schools and private students, by familiar illustrations and easy experiments," was written in 1822 by Dr. J. L. Comstock.<sup>37</sup>

*The Juvenile Philosopher; or Youth's Manual of Philosophy in Four Parts*; I, Natural Philosophy; II, Astronomy; III, Chemistry; IV, Physiology, was written in 1826, for the use of schools and juvenile readers.<sup>38</sup>

*The Elements of Chemistry* for the use of schools and academies (1827) by Fyfe of Edinburgh; with additions and alterations by John W. Webster of Harvard University, was especially recommended for use in the academies by the editor of *The American Journal of Education*.<sup>39</sup>

*Conversations on Chemistry*, in which the elements of that science are familiarly explained by Mrs. Bryant, was edited in America by J. L. Comstock, 1830.<sup>i</sup>

*New Conversations on Chemistry*, by T. P. Jones, was written in 1831.<sup>40</sup>

*Elements of Chemistry*, with practical exercises for use of schools, by Francis J. Grund, was written in 1833.<sup>41</sup>

In addition to these eight, nineteen other texts on chemistry were listed in the advertising pages of *Robert Hare's Compendium of the Course of Chemical Instruction in the Medical Department of the University of Pennsylvania*, published by Joseph G. Auner, Philadelphia, 1836.<sup>j</sup> This makes a total of twenty-seven chemistry texts which were offered for sale in the United States as early as 1836. The fact that the eight books listed above, and probably others, were prepared primarily for use in the academies

<sup>36</sup> Book review. *American Journal of Science* 5:404.

<sup>37</sup> *Ibid.*

<sup>38</sup> Book review. *American Journal of Education* 1:636.

<sup>39</sup> *Ibid.* 3:228-31.

<sup>40</sup> Book review. *American Annals of Education* 1:400.

<sup>41</sup> Book review. *American Journal of Science* 25:426. Revised also in *American Annals of Education* 3:600.

<sup>h</sup> A second edition of this book was published in 1825. A copy is in the library of the University of Minnesota. It is reviewed in the *American Journal of Education* 1:316.

<sup>i</sup> A copy was available to the writer. This 1830 publication was a "twelfth edition."

<sup>j</sup> A copy is in the library of the University of Minnesota.

proves quite conclusively that chemistry occupied a place of considerable prominence in the curriculum of the academy of this period, for certainly these books would not have been prepared had there not been a demand for them.

It would of course be erroneous to conclude that the teaching of chemistry in the early academies was done efficiently. The lack of equipment and, worse still, the dearth of trained teachers made efficient instruction impossible. In 1830, Catherine Beecher,<sup>k</sup> (1800-78), reported to the Trustees of the Hartford Female Academy that in the schools below the colleges

one teacher has been considered sufficient to teach Reading, Spelling, Grammar, Geography, Arithmetic, Composition, History, Natural Philosophy, Chemistry and the list in many cases might be extended to some eighteen or twenty other branches. In addition *one room* has been considered sufficient for every recitation, and every school exercise, as well as for the place devoted to study. As for apparatus for explanation and illustration it has been entirely out of the question; and had it been furnished, it would have been of little avail to teachers debarred from their duty and privilege of communicating knowledge, and condemned to spend their whole time in endeavoring to discover how much pupils have learned from books without the aid of a teacher.<sup>42</sup>

Even at as late a date as 1854 Francis Wayland<sup>l</sup> said before the American Institute of Instruction:

I have no doubt that thousands of the pupils of the somewhat advanced schools have gone through a system of chemistry supposing that they have studied that science without ever having witnessed a single experimental illustration, and whose whole knowledge consisted in the recollection for a few weeks of some of the terms of the chemical nomenclature.<sup>43</sup>

These statements indicate quite clearly that the textbook and question and answer method was by necessity widely predominant.

<sup>42</sup> Catherine E. Beecher, Principal. *Suggestions Respecting Improvement in Education, Presented to the Trustees of the Hartford Female Academy and Published at Their Request*. Extracts from, printed in the *American Journal of Education* 5:63-66.

<sup>43</sup> Francis Wayland, *A Review of the Progress of Education in This Country during the Past Twenty-five Years. Lectures Delivered before the American Institute of Instruction at Providence, 1854* p. 8.

<sup>k</sup> Catherine Beecher was quite a prominent educator and a strong advocate of household science courses for girls. For a sketch of her life see Barnard's *American Journal of Education* 28:65-96.

<sup>l</sup> Francis Wayland was the first president of the American Institute of Instruction, organized in 1830, at which time he was president of Brown University.

## CHAPTER III

### EFFORTS TO POPULARIZE CHEMISTRY AS A SUBJECT FOR SECONDARY EDUCATION

The previous chapter endeavored to show the place and importance of chemistry as a subject in the American secondary school in the first third of the nineteenth century. It has been noted that, although many of the academies included chemistry in their course of study, the instructors in chemistry were often ill prepared and consequently necessarily inefficient. Before science could hope to occupy a place of genuine prominence in the secondary-school curriculum several things were necessary. It was necessary that the public be made to recognize the need for instruction in science, that competent teachers be provided, and that satisfactory textbooks and apparatus be made available.

Efforts along all these lines appeared early in the nineteenth century. About 1820, steps were taken (1) to create a public sentiment which would be favorable toward giving scientific instruction a place in secondary schools; (2) to provide science teachers; and (3) to make apparatus available for use in the schools. The effort to supply these needs was led by certain individuals, chief of whom were John Griscom, Josiah Holbrook, Chester Dewey, Stephen Van Rensselaer, and Amos Eaton. These pioneers gave popular lectures on scientific subjects; they fostered the formation of popular scientific societies and teachers' associations, particularly the American Lyceum and the American Institute of Instruction; they studied the European scientific schools, particularly Fellenberg's institution at Howffyl, Switzerland; they endowed and encouraged the endowment of scientific schools in America, particularly the Rensselaer School at Troy, New York. Of these pioneers John Griscom (1774-1852) was one of the first to take a prominent part in the movement to popularize chemistry. Mr. Griscom, teacher of a Friends school at Burlington, New York, and a man of much ability, spent his leisure hours studying scientific subjects. He was much interested in natural philosophy, and in order to extend his interest purchased from England, with the profits from his school, an air pump and other

articles of apparatus from which he derived much pleasure. He heard of chemistry and was at once desirous to learn something of the subject which promised to unlock so many wonderful secrets. He secured a copy of Dr. Henry's *Epitome of Chemistry*, but after much effort was forced to conclude that chemistry was too difficult a subject of study to be understood by any means other than by professional study with the aid of an instructor. Later a friend loaned him a copy of an English translation of Lavoisier's chemistry. With this book he had greater success. He said that he read it with "utmost delight, understood everything clearly, and found it the most interesting study he had ever engaged in."<sup>1</sup> He next procured some chemical apparatus, and together with one of his more advanced pupils worked out some of the experiments described by Lavoisier. From this time forward he labored to enlarge his laboratory, sought the acquaintance of chemists, and read other chemistry texts. A later edition of Dr. Henry's *Epitome* he described as "perfectly intelligible and delightful." By 1805 he had performed successfully every experiment within the reach of his apparatus, and during the same year he gave instruction to his more advanced pupils in the common school of which he had charge. He remarked that his efforts were probably the first made in that part of the United States to teach chemistry in the common schools.<sup>2</sup> During the autumn of 1806 he issued a handbill proposing to the citizens of Burlington a course of public lectures on chemistry, to be given at his school-room. The proposition, he said, was well received and the most intelligent citizens gave it their patronage.

Mr. Griscom's success in his schoolroom as a teacher, and also his success in his new efforts to lecture on chemistry, led to his receiving a very attractive offer to go to New York City and take charge of a school there. He accepted the offer and in 1807 moved with his family to New York City. In addition to conducting a school he gave, during the winter of 1807-8, a course of popular lectures on chemistry. The lucrative contract which had brought Mr. Griscom to New York terminated in 1808 with the bankruptcy of its signers. He was then thrown upon his own resources. He secured a room in which to conduct school and began at once the construction of a brick building which was to

<sup>1</sup> John H. Griscom, *Memoirs of John Griscom* pp. 49-50.

<sup>2</sup> *Ibid.*

serve both as a schoolroom and a lecture-room. Both the school and the lecture-room were patronized by the best classes of society. Griscom labored incessantly to enlarge his store of knowledge and to keep abreast of the rapid progress which the science of chemistry was making. In order to enlarge his laboratory he secured, by subscription from his more wealthy patrons, the sum of \$1,500 which he expended in London for apparatus. Griscom continued his lectures on chemistry before popular audiences until 1818. Special audiences were gotten up, from time to time, from various classes of society.

Merchants, mechanics, apprentices, professional men, females, each, as the proposals were made to them contributed to fill his benches, and swell the tide of popularity with which his efforts to extend the benefits of scientific knowledge among the masses were hailed.<sup>3</sup>

In 1818 Mr. Griscom began a two-year tour of Europe. While visiting in Edinburgh he was much impressed with the success of the Lancasterian high school conducted there by a Professor Pillans. He became convinced of the practicability of the plan, and following his return to New York he opened, in conjunction with Daniel H. Barnes, an instructor in the classics, a high school, March 1, 1825,<sup>4</sup> which he conducted on the Lancasterian plan until 1831. The venture was highly successful. When it was at the height of its success, there were enrolled as many as 650 boys and 350 girls.<sup>5</sup> In spite of its success, the Society of Mechanics and Tradesmen of New York made such a liberal offer for the building in which the school was housed that the trustees decided to accept it. The school was accordingly closed late in the year of 1831.<sup>6</sup>

During the period of its existence Griscom's high school had attracted much attention, being patronized by some of the best families of New York. Mr. Griscom said that he had to give up a considerable amount of time to answer inquiries of correspondents concerning the plan of the school. Two months after its opening Governor DeWitt Clinton<sup>a</sup> visited the school and "acknowledged

<sup>3</sup> *Memoirs of John Griscom* p. 99.

<sup>4</sup> *Ibid.* p. 207.

<sup>5</sup> *Ibid.* p. 215.

<sup>6</sup> *Ibid.* p. 213.

<sup>a</sup> Governor Clinton was very sympathetic toward the Lancasterian method. During his term of service he urged its general adoption in the schools of New York. See *The Making of Our Middle Schools* p. 305.

that the institution surpassed his expectations."<sup>7</sup> After the school had closed Mr. Griscom wrote:

To the operation of the High School, during the several years of its existence, conjoined, as it was, with lectures on Natural Philosophy, Mechanics, Chemistry, Astronomy, Geology, Mineralogy, Physiology, &c., with the aid of apparatus that had cost, from time to time nearly \$4,000, delivered to the higher classes of pupils, may be in some measure ascribed that pervading and quickened attention to the important subject of popular education which now so increasingly engages the mass of the thinking members of the community.<sup>8</sup>

Mr. Griscom's greatest activity was that of giving popular lectures on chemistry, natural philosophy, and mineralogy. These he continued at intervals until bronchitic troubles made it impossible for him to speak in public. He was convinced "that every honest and judicious attempt that was made to turn the demonstrations of science to the establishment of sound physiological truths, would meet with a response in many a mind in every popular audience."<sup>9</sup> He expressed regret that more professors did not use their influence to popularize subjects of instruction. There can be no doubt that Mr. Griscom's repeated and successful efforts in this direction had an important influence in promoting the cause of popular instruction in chemistry.

Josiah Holbrook (1788-1854) was another early pioneer whose life work was consciously devoted to the cause of popular education in science. His first important effort, together with that of the Reverend Truman Coe, resulted in founding in 1824 on his farm at Derby, Connecticut, an agricultural seminary which was one of the first schools in America seeking to teach a popularized form of natural science, and to combine manual labor with education. The prospectus published in the newspapers of the day gives an account of the course of study and the plan of operation.<sup>10</sup> This prospectus bespeaks the needs of popular education as they were recognized by Mr. Holbrook, and which he devoted his life to fulfil.

<sup>7</sup> *Memoirs of John Griscom*, p. 210.

<sup>8</sup> *Ibid.* p. 216.

<sup>9</sup> *Ibid.* p. 337.

<sup>10</sup> This account of the Agricultural Seminary at Derby, Connecticut, was furnished by a former pupil of the seminary. *Barnard's American Journal of Education* 8:248.

Mr. Holbrook planned to furnish education in the classics as well as in the other subjects usually taught in the common schools. He proposed also to provide instruction in the applications of mathematics and the sciences to agriculture and industrial pursuits. The prospectus also gave plans for the preparation of science teachers to teach in the "common schools." It was in part as follows:<sup>11</sup>

The exercises designed are the study of Latin, Greek, French, and English Language, Rhetoric, Elocution, Geography, and History;—the Mathematics as Arithmetic, Algebra, Geometry, Plane and Spherical Trigonometry, Mensuration and Fluxions; Natural Philosophy in its various branches:—Astronomy, Chemistry, Mineralogy, Botany and Zoology. No effort will be spared to render these sciences practical, and fitted to common life. With that view, particular attention will be given to Composition, Declamation with extempore debates, the use of higher branches of Mathematics in common business, Practical Surveying, the application of natural philosophy to various kinds of machinery, agricultural implements, &c.,—testing the principles of chemical science in mixing and preparing soils, forming manures, making cider, beer, spirit, and various other articles of agriculture and domestic economy; agricultural, geological, and botanical excursions into various parts of the country, examining and analyzing soils, and practical agriculture.

One prominent object of the school is to qualify teachers. The most approved method of instruction will be introduced and lectures will be given on most of the Physical Sciences, attended with demonstrations and illustrations sufficiently plain and familiar to admit their being introduced into common education. Courses on Natural Philosophy, Chemistry, Mineralogy, and Botany will commence at the opening of the Seminary. . . .

This institution was unendowed, and after laboring under many embarrassments for a period of two years was discontinued. Mr. Holbrook stated, however, that this brief existence was sufficient to convince him of the practicability of the plan.<sup>12</sup> Mr. Holbrook's desire to popularize the study of scientific subjects led him next into the field of popular lecturing on natural science subjects. In order to provide a channel for the diffusion of scientific information, he proposed, in 1826, a plan for the formation, on an extensive scale throughout the cities of the United States, of Associations of Adults for Mutual Instruction.<sup>13</sup> In this plan it was stated that

<sup>11</sup> This account of the Agricultural Seminary at Derby Connecticut, was furnished by a former pupil of the seminary. *Barnard's American Journal of Education* 8:248.

<sup>12</sup> *Ibid.*

<sup>13</sup> Josiah Holbrook, Associations of Adults for Mutual Education. *American Journal of Education* 1:594-97.



The first object of this society is to procure for youths an economical and practical education, and to diffuse useful and practical information through the community generally. . . . The second object is to apply the sciences and the various branches of education to the domestic and useful arts, and to all the common purposes of life.

The plan proposed that branches of the society be formed in any place where a number of people were disposed to congregate for the purpose of mutual instruction. The society should hold meetings, as often as it thought expedient, for the purpose of mutual instruction in the sciences. The several branches of natural philosophy, namely, mechanics, hydrostatics, pneumatics, chemistry, mineralogy, botany, any branch of mathematics, history, political economy, or any political, intellectual, or moral subject, were to furnish material for discussion. If it was thought expedient a regular course of instruction, by lecture or otherwise, might be given. Books and apparatus for illustrating the work in the sciences were to be secured. The society might aid in establishing and patronizing institutions for the education of youths, institutions for the application of the sciences to agriculture and the other useful arts, and institutions for the training of teachers. It was proposed that delegates from all the town societies in a given county should form a county association, that delegates from the county associations should form a state association, and finally that a general board be formed embracing the United States.<sup>14</sup>

A few weeks after Mr. Holbrook had outlined the above proposal he delivered at Millbury, Worcester County, Massachusetts, a course of lectures on subjects in natural science, at the close of which he succeeded in inducing thirty or forty of his hearers, farmers and mechanics of the place, to organize themselves into a society for mutual improvement, which at his request was called Millbury Lyceum No. 1, Branch of the American Lyceum.<sup>15</sup> The formation of this lyceum at Millbury was quickly followed by that of several others in towns of that vicinity, and these were soon combined in pursuance of Mr. Holbrook's general plan of a lyceum into the Worcester County Lyceum.

<sup>14</sup> *Ibid.*

<sup>15</sup> Henry Barnard, Josiah Holbrook. Barnard's *American Journal of Education* 8:232.

From this time forward, for a period of four years, Mr. Holbrook devoted his major efforts to the organization of a system of institutions, to bear the collective name of the American Lyceum. The climax of his labors in behalf of the American Lyceum was reached when, on May 4, 1831, at the request of the New York State Lyceum, delegates from other state lyceums assembled to organize a national lyceum. Soon after the convention had assembled a committee on arrangements, consisting of Messrs. Griscom, Holbrook, Yates, Olmstead, and Sargent, was appointed, which after a short time reported a constitution for the American Lyceum. In this constitution it was stated that the object of the lyceum was the "advancement of Education, especially in the common schools and the general diffusion of knowledge."<sup>16</sup> By 1832 the branches of this organization had grown to extensive proportions and included eight or ten hundred town lyceums, fifty or sixty county lyceums, and several state lyceums.<sup>17</sup> Where town lyceums were established in the vicinity of academies the relation between the two appears to have been most salutary. Teacher and pupils contributed to the exercises of the lyceum and were in turn auditors at the lectures given by the members of the lyceum and by professional lecturers. In addition to this, the stock of apparatus in possession of the lyceum was frequently placed at the disposal of the academy.<sup>18</sup> The American Lyceum continued to have regular meetings until 1839, and the subject of secondary education was always a prominent one at the meetings.<sup>b</sup>

Mr. Holbrook's efforts in behalf of secondary education were directed to still other channels. Recognizing the need for school apparatus, he prepared and offered for sale simple apparatus for use in connection with geometry, arithmetic, geography, natural philosophy, chemistry, and astronomy.<sup>19</sup>

<sup>16</sup> American Lyceum. Constitution and notes on first meeting. *American Annals of Education* 1:273-280.

<sup>17</sup> Unsigned article. The American Lyceum, *American Annals of Education* 2:36.

<sup>18</sup> Unsigned article. The American Lyceum, *American Journal of Education* 3:703.

<sup>19</sup> Unsigned article. Mr. Holbrook's Apparatus for Schools and Lyceums, *American Journal of Education* 5:67-69.

<sup>b</sup> The proceedings of the American Lyceum, as well as the proceedings of various state, county, and town lyceums were published in the *American Journal of Education* 1826-30 and in the *American Annals of Education* 1831-39.

Growing out of the lyceum movement there developed a demand for popular articles on science for use in the meetings. To supply this need Mr. Holbrook began publishing in 1830 *Scientific Tracts Designed for Instruction and Entertainment, Adapted to Schools, Lyceums, and Families*. The first number of the *Scientific Tracts* dealt with atmosphere, the chemical changes which take place during respiration, the chemical properties of oxygen and of "carbonic acid or fixed air."<sup>20</sup> In 1832, Mr. Holbrook gave the publication of *Scientific Tracts* into other hands, and himself began the publication of *The Family Lyceum*, "for the use of the family circle and the village Lyceum." His aim was to publish herein "such material from the great storehouse of nature, as shall be the most highly entertaining, and the most permanently and extensively useful." Both *Scientific Tracts* and *The Family Lyceum* are said to have enjoyed a wide circulation.

Mr. Holbrook's activities in connection with the lyceum movement led him into most of the Atlantic states and as far west as the Mississippi River. His influence both directly and indirectly, through the American Lyceum, places him among the most prominent of any of our early pioneers in the cause of secondary education.

The efforts of Chester Dewey<sup>21</sup> (1784-1867) in behalf of secondary education, which we now turn to consider, were less extensive than those of John Griscom and Josiah Holbrook for the reason that only a relatively small portion of his life work was devoted to the field of secondary education. Mr. Dewey was principal of the Litchfield, Massachusetts, Gymnasium from 1827 to 1836, but except for this service his life was devoted to college and university work. While principal of the Litchfield Gymnasium he was appointed, by the American Lyceum, chairman of a committee to consider the advisability of introducing science subjects into the common school. While serving in this capacity

<sup>20</sup> Editorial Review of *Scientific Tracts* No. 1. *American Journal of Education* 5:247-54. Numbers I-XII bound as one volume were advertized in 1833. *American Annals of Education* 3:335.

<sup>21</sup> Martin B. Anderson. Sketch of the Life of Professor Chester Dewey, D.D., LL.D., Late Professor of Chemistry and Natural History in the University of Rochester and for many years a correspondent of the Smithsonian Institute. *Annual Report of the Board of Regents of Smithsonian Institute for 1870* pp. 231-40.

he prepared and read before the American Lyceum in 1833, a paper on *Natural History in the Common Schools*.<sup>22</sup> The prominence of the speaker secured for this paper wide publicity.

Mr. Dewey's plea was that instruction in natural history, which he defined as "the description of all the natural products to which man has access," be made a part of the work of the common schools. In support of his plea Mr. Dewey urged that the value of the knowledge gained by the study of science was sufficient justification for making a place for science in the curriculum of the common school. In addition to the value of the knowledge itself, he urged that there were indirect values attending the study of natural history. These indirect values which he enumerated were statements of disciplinary values which he insisted attended the study of science. These values were as follows:<sup>23</sup>

1. The study calls into efficient action the power of discrimination. The mind is trained to minuteness of examination, and to the improvement of its power of seeing and making distinctions. Thence the mind proceeds to generalizations.

2. The relation of one part to another of an object must be observed. The process of examination is fitted to induce the habit of attending to the relation of things, and of creating the power to consider the relations of things in all cases.

3. It leads to the adoption of system, arrangement, method, classification. Consider the multitude of facts in Chemistry, isolated and independent, until they were reduced to systematic order by some of the master spirits of modern times. This system, order, and arrangement is now a part of the subject itself, and the study can not be prosecuted, without this part of the logic being practically enforced upon the mind.

4. It stores the mind with objects of thought and interest, and prepares it to increase their number.

Mr. Dewey admitted that these advantages were not the most obvious but insisted upon their importance.<sup>c</sup> As evidence of their importance he said he knew of several instances of young men who had, by an attention to natural science, "become arrested in their mad career to intellectual and moral ruin."<sup>24</sup>

<sup>22</sup> *Natural Science in the Common Schools*, *American Annals of Education* 5:248-53, 304-11.

<sup>23</sup> *Ibid.* pp. 252-53.

<sup>24</sup> *Ibid.* p. 253.

<sup>c</sup> The same line of argument was given by A. Gray, *The Importance of the Natural Sciences in Our System of Popular Education*, *Lectures Delivered before the American Institute of Instruction at Boston, 1831* pp. 91-117, and by Clement Durgin, *On Natural History as a Branch of Common Education*, *ibid.* pp. 207-39.

In answer to the common objection, that science was a fit subject of study for mature minds only, he admitted that "the full and scientific study of Natural History in the common schools would be absurd." He insisted, though, that parts of mineralogy and geology, chemistry, botany, and zoology were most appropriate.<sup>25</sup>

His insistence upon the importance of chemistry is significant. He considered it a subordinate but necessary part of natural history; for, he said,

no description will approximate completeness, which does not include the knowledge of the elementary substances and their properties, of their combinations and actions, and of the qualities of the compounds.<sup>26</sup>

Concerning instruction in chemistry Mr. Dewey asserted that

a large number of experiments of the simpler kind might be performed by means of simple and common articles.

With a little expense, he said, the teacher would be enabled to exhibit some of the gases, and some of the more striking experiments.<sup>27</sup>

Apparently it was insisted during Mr. Dewey's time, as it has been ever since, when a new study applied for admission into the schools, that the curriculum was already full.<sup>d</sup> His answer to this objection has a familiar sound also for he did not urge that any of the subjects then included be displaced, but maintained that it was necessary only to provide better methods of instruction, better books, and better apparatus in order to secure from the daily program enough time for instruction in the sciences.<sup>28</sup>

Mr. Dewey's paper was constructive and conservative. He urged instruction in natural history in the common schools because this study was unmistakably practicable, because it was easy to understand, and because the method of study supposedly provided valuable mental discipline. Because of these values he urged that, as better methods of instruction made possible extension of the curricula, the subjects of natural history were well

<sup>25</sup> Natural Science in the Common Schools. *American Annals of Education* 5:251.

<sup>26</sup> *Ibid.* p. 248.

<sup>27</sup> *Ibid.* p. 253.

<sup>28</sup> *Ibid.* pp. 306-8.

<sup>d</sup> In 1836 it was "resolved" before the Vermont Literary Society, "that in the judgment of this convention, opinions favoring the introduction of a more popular course of study as a substitute for the ancient classics, have a tendency injurious to the cause of sound education." *American Annals of Education* 6:424.

worth a place of greater prominence than that which they, up to that time, had occupied.

The wide publicity given to this paper by the American Lyceum and *The American Annals of Education* gave to Mr. Dewey's efforts in behalf of secondary education an importance which must be recognized.

The influence of Stephen Van Rensselaer (1764-1839) and Amos Eaton (1777-1842) were synthesized in their efforts in behalf of the Rensselaer School at Troy, New York, which was established and endowed by Mr. Van Rensselaer in 1824, and of which Mr. Eaton was made senior professor. The work of these men and the institution of which they were in charge is deserving of somewhat extended consideration. The chief aim at the Rensselaer School was to furnish training in the application of science, and more especially to train youths for the service of science-teaching. In order to extend the influence of his school outside the bounds of its immediate vicinity, Mr. Van Rensselaer planned to train teachers who were to serve as itinerant lecturers for school communities, to lecture on the applications of the sciences to agriculture and manufacturing.

A written statement of the purpose of the school appears first in a letter from Mr. Van Rensselaer, dated November 5, 1824, and addressed to the Reverend Samuel Blatchford, in which Mr. Blatchford was asked to serve as president of the Board of Trustees. He wrote:

I have established a school at the north end of Troy in Rensselaer County (New York) for the purpose of instructing persons, who may choose to apply themselves, in the application of science to the common purposes of life. My principal object is to qualify teachers for instructing the sons and daughters of farmers and mechanics, by lectures or otherwise, in the application of experimental chemistry, philosophy and natural history, to agriculture, domestic economy, the arts and manufactures.<sup>29</sup>

On December 29, 1824, after the receipt of Mr. Van Rensselaer's letter, the Reverend Dr. Blatchford called together the Board of Trustees of the Rensselaer School for their first meeting. The organization of the course of study and the methods of instruction may be learned from the minutes of the first meeting<sup>30</sup> at which it was

<sup>29</sup> *History of the Rensselaer Polytechnic Institute, 1824-1914* p. 9.

<sup>30</sup> *Ibid.* pp. 31-32.

Resolved, That persons attending the course of instruction at the Rensselaer School be distributed into three classes, viz.: a Day Class, an Afternoon Class, and an Evening Class. . . . The exercises of the Day Class, for six hours in each day, except Sunday, shall consist of experiments in chemistry performed by the students themselves, and in giving explanations, or the rationale of the experiments; . . . . The Afternoon Class shall consist of those who may have previously attended one or more courses of lectures on chemistry at some public institution. They will hear no afternoon lectures; but their exercises will consist of a course of experiments in chemistry performed by themselves, as above, with the rationale, conducted under the superintendence of the senior professor. . . . The Evening Class will attend lectures, on three evenings of each week, for ten weeks. This course of lectures will embrace chemistry, experimental philosophy, and the outlines of mineralogy, botany, and zoology. . . .

The founder had stated in his first letter concerning the Rensselaer School that the purpose was to give instruction in the *application of science to the common purposes of life*. The curriculum agreed upon by the trustees in 1825 made provision for carrying out this original aim. It was ruled that

the course of exercises for the Spring Term shall be, as nearly as circumstances will admit as follows: Each student shall, during the first six weeks, give ten lectures on experimental philosophy; ten lectures on chemical powers and on substances not metallic; and ten lectures on metalloids, metals, soils, and mineral waters. For the remainder of the term each student shall be exercised in the application of the sciences before enumerated to the analysis of particular selected specimens of soils, manures, animal and vegetable substances, ores, and mineral waters; and shall devote four hours each day unless excused by one of the faculty, to the examination of operations of the agriculturists on the school farm, together with the progress of cultivated grains, grasses, fruit trees, and other plants, to practical land surveying and general mensuration, to calculations upon the application of water power and steam which is made to the various machines in the vicinity of the school and to an examination of the laws of hydrostatics and hydrodynamics which are exemplified by the locks, canals, aqueducts, and natural waterfalls surrounding the institution.<sup>31</sup>

The essential point of view in the method of communicating instruction was, "to instruct by putting the pupil in the place of teachers." It was argued that teachers improve themselves more by teaching than they do their students, and that advantage should be taken of this fact in imparting instruction. Each student was compelled to rely upon his own resources and prepare lectures

<sup>31</sup> *Ibid.* p. 41.

for delivery before his classmates and instructor. This method of instruction seemed especially useful for preparing itinerating teachers for the work they were to do.<sup>32</sup>

An interesting and natural inquiry in connection with the establishment of the Rensselaer School is to what extent its curriculum and methods were affected by European influence. The trustees of Rensselaer School were unwilling to admit that foreign influence affected the method of instruction or the general plan of the school. They insisted that it was neither Fellenbergian<sup>e</sup> nor Lancasterian<sup>f</sup> but purely Rensselaerian.<sup>33</sup>

The high standard of scholarship maintained kept the numbers small for many years and prevented the school from being self-supporting. Up to 1832 the enrollment never exceeded 25, and at one time 12 of the 25 enrolled were college graduates.<sup>34</sup> In the notices for the ninth annual course, 1832-33, it was announced that the patron had advanced over twenty-two thousand dollars in support of the school for the first eight years.<sup>35</sup>

In 1826 a "preparation branch" was provided to accommodate those who were unqualified for entrance to the school proper.<sup>36</sup> In 1828 "at the urgent solicitation of several judicious friends, a lady, well qualified for the duty, took charge of two experimental courses in chemistry and natural philosophy for ladies."<sup>37</sup>

The patron was persistent in his desire to extend the influence of his plan of instruction. He clung with great tenacity to his original object, to prepare teachers for instructing the sons and daughters of farmers and mechanics in the applications of science to "the common purposes of life." In order to extend the usefulness of the institution the faculty was authorized May 24, 1827, to establish district branches in any part of the state when application was made and assurance given by responsible persons that

<sup>32</sup> Extract from a pamphlet containing the constitution and laws of Rensselaer School, *American Journal of Education* 2:421-22.

<sup>33</sup> *Ibid.*

<sup>34</sup> *History of Rensselaer Polytechnic Institute* p. 69.

<sup>35</sup> *Ibid.*

<sup>36</sup> *Ibid.* p. 54.

<sup>37</sup> *Ibid.* p. 63.

<sup>e</sup> After Philipp Emmanuel von Fellenberg, whose school was established at Howfyll, Switzerland, 1808.

<sup>f</sup> After Joseph Lancaster. It is evident that the Rensselaerian method was greatly opposed to the Lancasterian for since each pupil was required to lecture before his instructor, the number of pupils which one instructor would be able to care for was necessarily small.



suitable rooms and sufficient apparatus would be supplied. Arrangements were made whereby students educated in these district branches might receive the same credit for their work as those who were educated at Troy.<sup>38</sup>

During the same year (1827) the school issued a pamphlet containing directions for introducing experimental science into academies and common schools.<sup>39</sup>

In the following year (1828) the patron issued an invitation to each county to furnish one student, selected by the "first judge" of the county, for gratuitous instruction. This student, in return for his instruction, was expected to return to the county from which he had been sent and engage in the work of giving instruction in the sciences in the common schools. This invitation was announced in the *Zion's Herald* of June 11, 1828 in the following words:

*The Rensselaer School.* The founder of this school, Hon. Stephen Van Rensselaer, has given notice that any gentleman, of good moral character above the age of eighteen, who shall obtain a certificate from the first judge of any county, (who is to issue one only) in that county, that his education is sufficient to teach any incorporated academy in the county, and give assurance that if he is admitted to a course of experimental instruction at the expense of Hon. Stephen Van Rensselaer, he will return to that county and exert himself to the best of his abilities to introduce and extend the experimental plan of education, with its application to agriculture, and the arts, for the benefit of the farmers and mechanics of that county, provided he can receive a reasonable compensation for his services—shall be furnished with instruction at the Rensselaer School in Troy, during the ensuing fall term of fifteen weeks, to commence on the third Wednesday in July. He shall also be furnished with the Chymical tests, reagents, and other substances necessary to be consumed by him in his experiments, with fuel, lights, use of chymical and philosophical apparatus, library, reading rooms, cabinet, the services of the school waiter, and other advantages usually furnished to the students of said school, free of all charge.<sup>40</sup>

This invitation is said to have been accepted by nearly all the counties of New York state.

The extent of the influence exerted by the Rensselaer School may be inferred from a letter to the editor of the *American Annals of Education* signed by "One of the Teachers of Rensselaer School." The letter was written in reply to an article by

<sup>38</sup> *History of Rensselaer*. Polytechnic Institute, p. 60-61.

<sup>39</sup> *Ibid.* p. 61. This pamphlet was not available to the writer.

<sup>40</sup> Diffusion of Practical Education. *American Journal of Education* 3:573.

T. H. Gallaudet,<sup>8</sup> entitled "Remarks on Seminaries for Teachers" which had been published in an earlier number of the above periodical. The letter is deserving of complete reproduction here.<sup>41</sup>

I was astonished to learn from Mr. Gallaudet's remarks on *Seminaries for Teachers*, that neither he nor the Editor knew that a Seminary for Teachers existed in this country. It seems to be known to the Editor, that such an institution exists in one of the Cantons of Switzerland, and he speaks highly of the liberality of 150,000 inhabitants, who contribute \$2,000 annually for its support. But neither editor nor correspondent ever heard of an institution of the kind, incorporated by the Legislature, in the city of Troy, New York, which has been supported almost seven years by a single individual, the Hon. Stephen Van Rensselaer, at the average annual expense of more than \$3,000. There is, indeed, a consoling note to page 48, in which the Editor says, "we believe this experiment has been tried to a limited extent," &c.; and we are desirous to learn "the results," &c. In answer, I state that the results have far exceeded the most sanguine expectations of its founder, or of his immediate agents, or of the trustees. Five classes have graduated at this school, and many of the members of each class are now engaged in teaching upon the experimental and demonstrative plan; and in preparing other teachers for the same duties. Such schools are now in successful progress in Canada, Detroit, in various parts of the State of New York, Pennsylvania, Maryland, Virginia, Ohio, Kentucky, South Carolina, and Georgia. Teachers educated here, are at this moment itinerating for the diffusion of the practical method of instruction in nearly every State of the Union—not by useless declamation in favor of this method of instruction; but by giving from thirty to forty experimental exercises in Chemistry and experimental philosophy, and teaching the analysis of minerals, plants, animals, &c., wherever they are employed. Many of the practical improvements described in the journals of the few last years were the *unacknowledged* improvements exhibited by our itinerating and permanent teachers.

It may be asked, why has not the true character of the Rensselaer method of instruction been better appreciated in the eastern parts of New England? I answer, the patron totally forbids any publication, other than a plain statement of the simple facts necessary to be known, and of the terms of admission. Such statements have been published; but in these days of extravagant boastings, simple truths are received with much allowance for presumed overrating.

<sup>41</sup> Correspondence to the editor. *American Annals of Education* 1:231.

<sup>8</sup> Thomas Hopkins Gallaudet (1787-1851). Founded the first American asylum for deaf-mutes and introduced the sign alphabet into America. During 1832-33 he was professor of education and philosophy in New York University. This was the first professorship of education held in the United States. Monroe's *Cyclopedia of Education*.

Mr. Gallaudet's remark applies to this subject with considerable force where he says—"Information must be gradually diffused"—the whole mass of the community cannot at once be electrified, as it were, into one deep and universal excitement. In addition to this, one assistant is required to every five persons who are to be thus prepared for experimental teachers of common schools; consequently the progress of preparing teachers is expensive and slow. Showing all the necessary manipulations, teaching the names and characters of the subjects of Natural History, the method which long experience has taught for teaching by extemporaneous lectures, essays, &c., given by the learner, requires the perpetual presence and constant labour of a teacher, with so small a number that all can stand around the same cistern, furnace, set of specimens, &c.

Yours Respectfully,  
ONE OF THE TEACHERS OF RENSSELAER SCHOOL

It is difficult to separate the influence of Amos Eaton from that of Stephen Van Rensselaer. From 1824 to 1842 Eaton was senior professor and chief spokesman for the Rensselaer School. The publications of the Rensselaer School were liberal in allowing to Mr. Van Rensselaer credit for formulating his plan of instruction. It is certain that the relations between these two men were always most harmonious. Eaton was educated to be a lawyer and followed this profession from 1803 to 1815. His interest in natural science, however, was always uppermost, and in 1815 he gave up his legal practice and went to Yale to prepare himself for more useful work in this field. While there he received much encouragement from Professor Benjamin Silliman, who was at that time probably the most prominent American scientist.<sup>42</sup> From there he went to the faculty of Williams College, where he formed an intimate and lasting friendship with Professor Chester Dewey. He labored to increase the fund of scientific knowledge by making geological and botanical surveys, and endeavored to increase the popularity of science by giving popular lectures illustrated by experiments.<sup>43</sup> Before the Rensselaer County (New York) School Association of which he was president, and through which he labored to interest teachers of the common schools and academies in teaching science, Mr. Eaton delivered an address in which he attempted to answer the question: "To what extent can instruction in natural science be introduced into our common schools?"<sup>43</sup> Mr. Eaton maintained in common with

<sup>42</sup> *History of William's College* pp. 361-71.

<sup>43</sup> *American Annals of Education* 1:372.

<sup>44</sup> G. P. Fisher, *Life of Benjamin J. Silliman*.

Chester Dewey<sup>1</sup> that the sciences could be taught without neglecting those subjects usually included in the common-school curriculum if better instructors for these schools could be prepared. He advised especially the plan of instruction for training teachers that was being used at the Rensselaer School. He advised further, that until instructors generally should become qualified, circuit or itinerating teachers should be employed to attend to these branches of instruction in the schools of a particular district, giving one lecture every week, and directing and advising the instructor in pursuing the course.<sup>41</sup> The industry and enthusiasm displayed by Professor Eaton made him an invaluable man to aid in promoting the plan for extending the teaching of science.

The work of John Griscom, Josiah Holbrook, and Chester Dewey as individuals, and of Stephen Van Rensselaer and Amos Eaton as the guiding spirits of the Rensselaer School, represents the most influential of the agencies working in behalf of science instruction in secondary schools that the available literature has revealed. Josiah Holbrook was the leading instigator and organizer of the American Lyceum, and without his efforts this organization would probably never have come into existence. It is certain, however, that Griscom, Dewey, and Eaton were by no means the only individuals to champion from the popular platform the cause of secondary instruction in science; but their efforts were probably more insistent and better organized than those of others, and were given greater prominence in the available literature. The Rensselaer School was probably one of the most influential of a type of which it was by no means the sole representative. It is impossible to measure the influence of the foregoing personages and organizations. Only the object toward which they were working can be definitely given. Among the many motives stimulating these efforts was the desire to improve education. Their efforts were indorsed and promoted by the recognized leaders of education of the period in which they lived. It is highly probable that there were influences other than those noted above that were working in support of instruc-

<sup>41</sup> *American Annals of Education* 1:372.

<sup>1</sup> Ante p. 33.

tion in the sciences<sup>1</sup> in secondary schools, and certainly one which is deserving of mention is the fact that chemistry and other natural sciences were required subjects of study in certain of the secondary schools of Germany and France. Before concluding this study it is desirable to discover what place was provided in the curricula of our earliest high schools for the study of natural science.

<sup>1</sup>The influence of the Pestalozzian movement was exerted chiefly in support of the elementary schools. This movement, however, was not without influence on the secondary-school subjects, for in the first American Pestalozzian school chemistry was taught "by the latest and most approved methods." William McClure, An Epitome of an Improved Pestalozzian System of Education, *American Journal of Science* 10: 145-51. Again it was said that "among the foremost subjects for visible illustration must be reckoned the branches of Natural history and the physical sciences in their most extended sense." Chemistry was mentioned as especially valuable. W. R. Johnson, On the Utility of Visible Illustration. *American Annals of Education* 3:97-112.

## CHAPTER IV

### CONCLUSION—CHEMISTRY IN THE EARLY HIGH SCHOOLS

It is impossible to furnish satisfactory data as to the number of high schools existing in the United States prior to 1860. Both before and after this date, school statistics were frequently not gathered, and such as were compiled were often incomplete, often unreliable. It need occasion no surprise therefore that such statements as are available concerning the number of high schools in the United States during this early period are conflicting. W. T. Harris asserts that the number of high schools in the United States in 1860 was 40.<sup>1</sup> Yet Brown states that Massachusetts alone had as many as 64 high schools in 1852 and Ohio as many as 97 in 1856.<sup>2</sup> Statistics gathered by the United States Commissioner of Education in 1903-4 indicate that previous to 1860 there were in the United States 321 high schools.<sup>3</sup> It is possible that the wide variation in the data given by different authorities is due to the fact that during the period from 1830 to 1860 many secondary schools were in a state of transition, and are classified by some authorities as public high schools and by other authorities as academies.

Massachusetts took the lead in establishing free public high schools. According to the above report of the Commissioner of Education, this state had 37 public high schools in 1850.<sup>4</sup> In Ohio, following the passage of the "Akron Law" in 1847,<sup>5</sup> high schools were established in many cities, with the result that by 1860 these two states were well in the lead of all others in number of high schools. According to Brown the first ten high schools were in New England<sup>6</sup> and the eleventh was in Philadelphia.<sup>7</sup>

<sup>1</sup> W. T. Harris, *Recent Growth of Public High Schools in the United States as Affecting the Attendance of Colleges, Addresses and Proceedings of the National Educational Association, Fortieth Annual Meeting, Detroit, Michigan, 1901* p. 175.

<sup>2</sup> *The Making of Our Middle Schools* p. 313. See also E. S. Miller, *High Schools in Ohio Prior to 1850, School Review* 28:455-69.

<sup>3</sup> *Report of the United States Commissioner of Education for the Year Ending 1901* pp. 1782-1880.

<sup>4</sup> *Ibid.*

<sup>5</sup> *The Making of Our Middle Schools* p. 353.

<sup>6</sup> Edmonds, *History of Franklin High School of Philadelphia* p. 29. An extended quotation from a letter of E. E. Brown's is given in footnote.

<sup>7</sup> *Ibid.*

The following table presents the names of the eleven earliest New England high schools cited by Brown and Inglis, together with the dates of their establishment.

TABLE IV  
EARLIEST NEW ENGLAND HIGH SCHOOLS<sup>a</sup>

	FOUNDED
1. The English Classical School, now the English High School, Boston .....	1821
2. The High School for Girls, Boston. Discontinued 1828. Re-established 1852 .....	1826
3. New Bedford, Massachusetts.....	1827
4. Haverhill, Massachusetts .....	1827
5. Salem, Massachusetts <sup>8</sup> .....	1827
6. Burlington, Vermont.....	1829
7. Lowell, Massachusetts .....	1831
8. Medford, Massachusetts.....	1835
9. Augusta, Maine.....	1835
10. Brunswick, Maine .....	1835
11. Pittston, Maine.....	1837

Using the data given in the Federal Commissioner's report of 1903-4, Inglis has compiled the following table (Table V) which shows, in a general way at least, the rate of development by decades of high schools in the United States.<sup>9</sup>

In view of the fact that the academy was the forerunner of the public high school, no other educational institution played a larger part in determining the character of the latter. In a considerable number of cases academies were converted into public high schools with free tuition. In other cases academies with endowments reduced the tuition charge to a small fee, and thus were able to compete with the free high schools. Chemistry, occupying, as it did, a rather prominent place in the academy, was a part of the large heritage which the high school gained from the academy, and its introduction into high schools was contemporaneous with their development. In this study of the teaching of chemistry in the early high schools, our attention is necessarily directed to those states and cities which first provided public high schools, namely, Massachusetts and Ohio, and the cities Philadelphia, Chicago, and St. Louis.

<sup>8</sup> Inglis, *Rise of the High School in Massachusetts* p. 44.

<sup>9</sup> *Ibid.*, p. 155.

<sup>a</sup> All data in this table except as otherwise indicated are taken from Brown. (See footnote 6.)

TABLE V  
ESTABLISHMENT OF HIGH SCHOOLS IN THE UNITED STATES<sup>b</sup>

	BEFORE 1820	1820-30	1831-40	1841-50	1851-60	TOTAL
Massachusetts . . . .	3	2	6	26	41	78
Vermont . . . . .	1	1	2	2	3	9
New Hampshire . . .	1	1	0	3	2	7
Maine . . . . .	2	0	3	5	4	14
Connecticut . . . . .	1	0	3	2	2	8
Rhode Island . . . . .	0	0	0	3	2	5
New York . . . . .	1	4	5	9	22	41
New Jersey . . . . .	0	0	1	0	3	4
Pennsylvania . . . . .	0	0	1	4	12	17
Ohio . . . . .	0	0	0	15	33	48
Illinois . . . . .	1	0	0	0	9	10
Indiana . . . . .	0	0	0	0	9	9
Michigan . . . . .	0	0	0	7	12	19
Wisconsin . . . . .	0	0	0	1	6	7
All others . . . . .	3	1	5	13	23	45
	<hr/> 13	<hr/> 9	<hr/> 26	<hr/> 90	<hr/> 183	<hr/> 321

The early Massachusetts high schools quite generally provided instruction in chemistry. The findings of Inglis in his study of *The Rise of the High School in Massachusetts* support the thesis stated on page 1 of this study, namely, that during the first half of the nineteenth century instruction in elementary science was prominent in many secondary schools. The second high school to be established in the United States, the Boston High School for Girls, was the first to provide definitely for chemistry.<sup>10</sup> This school was founded 1826. It was provided that the course of study "should include as much chemistry as would be useful in domestic economy." Chemistry was placed in the third year and made a required subject of the first course of study offered.

From the reports of Massachusetts high schools issued previous to 1861, Inglis has computed the per cent of the total high school students who were enrolled in the various subjects included in the curricula. The following table summarizes the total

<sup>10</sup> Boston High School for Girls. Extracts from the Records of the Boston School Committee. *American Journal of Education* 1:99.

<sup>b</sup> Some of the schools included in this report apparently reported as the date of their establishment the date at which the academy, which later became the public high school, was established. There is no record of any free high school in existence previous to 1820, yet this table includes thirteen.



number of students enrolled in four Massachusetts high schools, together with the per cent of enrollment taking chemistry.<sup>11</sup>

TABLE VI

PER CENT OF STUDENTS ENROLLED IN CHEMISTRY IN FOUR MASSACHUSETTS  
HIGH SCHOOLS FOR YEARS INDICATED

HIGH SCHOOL	ENROLLMENT	PER CENT IN CHEMISTRY	YEAR
Northampton .....	274	4.4	1837
Haverhill .....	72	2.0	1842
Lowell .....	...	22.0	1850
Springfield .....	166	16.9	1856

In addition to the towns included in Table VI, in three towns considered collectively the number of students enrolled in chemistry in 1860 was 41.2 per cent of the number enrolled in algebra,<sup>12</sup> and of five towns considered collectively the number of students enrolled in chemistry in 1860 was 50.7 per cent of the number enrolled in algebra.<sup>13</sup>

In 1857 Massachusetts passed a law which remained in force until 1898 when it was repealed. This law provided that

Every town may and every town containing 500 families or households . . . shall maintain a school kept by a master . . . who . . . shall give instruction in general history, book-keeping, surveying, geometry, natural philosophy, chemistry, botany and . . .<sup>14</sup>

In 1860-61 there were in Massachusetts 55 towns of 500 families or over.<sup>15</sup> Inglis found that of these 55 towns 52 included chemistry in their course of study.<sup>16</sup> Not only did the high schools in Massachusetts generally teach chemistry, but instruction in chemistry even outstripped the development of high schools. It is significant that in 1840, when 301 towns reported, there were 57 which claimed to offer instruction in chemistry,<sup>17</sup> yet the best information available shows that there were but 11 public high

<sup>11</sup> *Rise of the High School in Massachusetts*, Tables XXVII p. 88, XXXI p. 91, XXXII p. 93.

<sup>12</sup> *Ibid.* Table XXIX p. 89.

<sup>13</sup> *Ibid.* Table XXX p. 90.

<sup>14</sup> *Twenty-fourth Annual Report of the Massachusetts Board of Education together with the Twenty-fourth Annual Report of the Secretary of the Board 1861* p. 91.

<sup>15</sup> *Rise of the High School in Massachusetts* p. 84.

<sup>16</sup> *Ibid.*

<sup>17</sup> *Ibid.* Table XVIII p. 75 and Table XXXV p. 155.

schools in Massachusetts in 1840. It is interesting to note that other natural-science subjects were taught at this time in many towns which had no high school. Of the same 301 towns reporting in 1840, 170 taught natural philosophy, 58 taught astronomy, 9 taught botany, and 2 taught anatomy and physiology.<sup>18</sup> No subject of those commonly taught in secondary schools, except United States history, was more widely taught than natural philosophy, and there were more than twice as many towns offering instruction in chemistry as in geometry. It is evident therefore that the natural-science subjects occupied a very prominent place in the public schools of Massachusetts during the first half of the nineteenth century.

TABLE VII

NUMBER OF STUDENTS ENROLLED IN THE HIGH SCHOOLS OF OHIO, NUMBER OF STUDENTS ENROLLED IN CHEMISTRY, AND THE PER CENT WHICH THE ENROLLMENT IN CHEMISTRY IS OF THE TOTAL HIGH-SCHOOL ENROLLMENT

YEAR	HIGH SCHOOL ENROLLMENT	CHEMISTRY ENROLLMENT	PER CENT
1854 (76) <sup>19</sup> .....	2414	642	26.6
1855 (87) .....	7522	906	12.0
1856 (82) .....	8554	514	6.0
1857 (130) .....	8372	729	8.7
1858 (28) .....	10729	786	7.2
1859 (27) .....	10518	941	8.9
1860 (34) .....	13183	1141	8.6
1861 (51) .....	12902	873	6.8
1862 (11) .....	7333	890	12.0
1863 (54) .....	8341	777	9.3
1864 (91) .....	11881	685	5.7
1865 (17) .....	9114	565	6.2
1866 (17) .....	9582	517	5.3
1867 (15) .....	11355	666	5.8
1868 (26) .....	11958	679	5.7
1869 (67) .....	12146	831	6.8
1870 (80) .....	18828	664	3.5
1871 (27) .....	22690	823	3.6
1872 (36) .....	21855	853	3.9

A brief consideration of the early high schools in Ohio will show that chemistry was quite generally included in the secondary

<sup>18</sup> *Rise of the High School in Massachusetts* p. 84.

<sup>19</sup> Number in parenthesis refers to page in report of Commissioner for year indicated, from which data are taken.

course of study in this state also. The first published *Annual Report of the Ohio State Commissioner of Common Schools* appeared in 1854. In this report and in the subsequent annual reports are given definite statements of the number of students in the state enrolled in high schools, and the number of students enrolled in the various high-school subjects. Table VII presents this data for the years 1854-72 inclusive.

Table VIII is inserted for the sake of showing the importance of chemistry in Ohio high schools compared with other high school subjects in the year 1856.<sup>20</sup>

TABLE VIII

NUMBER OF PUPILS STUDYING VARIOUS SUBJECTS IN OHIO IN 1855-56

SUBJECT	PUPILS	SUBJECT	PUPILS
Algebra .....	5790	Zoology .....	165
Geometry .....	934	Latin .....	675
Natural Philosophy.....	1167	Greek .....	113
Chemistry .....	514	German .....	903
Rhetoric .....	404	French .....	180
Astronomy .....	655	Botany .....	53
Geology .....	297	Trigonometry .....	5

Chemistry was quite generally included in the high-school curricula of the larger cities in states other than Massachusetts and Ohio. In the Central High School of Philadelphia, established in 1838, and the first in that city, James C. Booth<sup>c</sup> was appointed instructor in chemistry in 1842.<sup>21</sup> The first building did not contain a laboratory. In the new building which was occupied in 1854 a laboratory for chemistry and natural philosophy was provided.<sup>22</sup> In the first high-school buildings erected in Chicago<sup>23</sup> and St. Louis,<sup>24</sup> provisions were made for chemical laboratories. Further evidence of the importance of chemistry as a subject in

<sup>20</sup> *Third Annual Report of the State Commissioner of Common Schools (Ohio) for the Year Ending August 31, 1856* p. 6.

<sup>21</sup> *History of Central High School of Philadelphia*, p. 57.

<sup>22</sup> *Ibid.* p. 142. See also article by John S. Hart, *Description of a Public High School in Philadelphia*, Barnard's *American Journal of Education* 1:93.

<sup>23</sup> W. H. Wells, *Public High School in Chicago*, Barnard's *American Journal of Education* 3:531.

<sup>24</sup> J. H. Tice, *First Annual Report of the St. Louis Schools*, Barnard's *American Journal of Education* 1:353.

<sup>c</sup> James C. Booth, 1810-88, was graduated from the University of Pennsylvania in 1829. He afterwards studied at the Rensselaer School and later under Wöhler and Magnus in Germany. He had an eminent reputation as a chemist. He served in the Central High School of Philadelphia from 1842 to 1845, after which he was appointed refiner in the United States Mint at Philadelphia, which position he held until his death. Edmonds' *History of Central High School of Philadelphia* p. 57.

the early high schools may be gleaned from a study of the American public schools conducted by Henry Barnard in 1867. According to Barnard, of 30 of the larger cities in the United States, 26 taught chemistry in 1867. The extent to which chemistry, compared with other subjects, was taught in the 30 cities listed by Barnard is shown in the following table.

TABLE IX  
NUMBER OF HIGH SCHOOLS TEACHING CERTAIN SUBJECTS<sup>25</sup>

SUBJECT	NUMBER OF SCHOOLS TEACHING	SUBJECT	NUMBER OF SCHOOLS TEACHING
Algebra .....	30	Physical Geography.....	25
Geometry .....	30	Botany .....	24
Natural Philosophy.....	30	Arithmetic .....	23
Rhetoric .....	28	Trigonometry .....	22
Physiology .....	28	Geology .....	21
Latin .....	27	English Literature.....	21
History .....	26	Greek .....	18
Chemistry .....	26	Bookkeeping .....	18
Astronomy .....	25	German .....	15

The cities in Barnard's lists which taught chemistry in 1867 were:<sup>26</sup>

Baltimore	Indianapolis	Providence
Boston	Lewiston, Maine	Rochester
Cambridge	Louisville	Sandusky
Chicago	Manchester	San Francisco
Cincinnati	New York	Springfield, Illinois
Cleveland	New Haven	St. Louis
Dubuque	Niles, Michigan	Terre Haute
Fond du Lac	Philadelphia	Worcester
Hartford	Portland	

The thesis which this paper has attempted to prove is that chemistry was an important secondary-school subject prior to 1850. The argument presented may be summarized as follows:

A. The way for the introduction of chemistry into the secondary schools was prepared early in the nineteenth century by at least three important developments:

<sup>25</sup> Henry Barnard, Rules and Regulations of Public Schools, Barnard's *American Journal of Education* 19:463.

<sup>26</sup> *Ibid.*

1. The first three decades of the nineteenth century witnessed a rapid growth of interest in chemical and other scientific study.<sup>27</sup>

2. As early as 1800 chemistry was taught in at least 4 American universities (or colleges) and by the year 1839 there were at least 37 colleges and universities in which it was taught.<sup>28</sup>

3. Seven important scientific societies were established in America between 1800 and 1817.<sup>29</sup>

B. The following lines of evidence show that chemistry had gained a place in the secondary schools prior to 1850.

1. Chemistry was taught in at least 1 academy (Onondaga, New York) as early as 1813; at least 16 included chemistry in their curricula as early as 1826; and at least 34 as early as 1840.<sup>30</sup>

2. As early as 1836 there were at least 8 elementary texts and 19 more complete treatments on chemistry offered for sale in the United States.<sup>31</sup>

3. Prior to 1850, for the purpose of extending the teaching of chemistry and other natural sciences in secondary schools, certain prominent individuals, chief of whom were John Griscom,<sup>32</sup> Josiah Holbrook,<sup>33</sup> Chester Dewey,<sup>34</sup> and Amos Eaton,<sup>35</sup> gave popular lectures on scientific subjects and fostered the formation of scientific societies.

4. The specific aim of the American Lyceum, established in 1830, was the extension of the study of natural science in common schools.<sup>36</sup>

5. The principal object of the Rensselaer School, established in 1824, was

to qualify teachers for instructing the sons and daughters of farmers and mechanics, by lecture or otherwise, in the application of experimental chemistry, philosophy, and natural history, to agriculture, domestic economy, the arts and manufactures.<sup>37</sup>

<sup>27</sup> Cf. p. 2 ff.

<sup>28</sup> Cf. pp. 5-6.

<sup>29</sup> Unsigned article. Survey of the Progress and Actual State of Natural Sciences in the United States from the Beginning of the Century to the Present Time. *American Monthly Magazine* 2:82.

<sup>30</sup> Cf. pp. 16-17.

<sup>31</sup> Cf. pp. 21-23.

<sup>32</sup> Cf. pp. 24-27.

<sup>33</sup> Cf. pp. 27-31.

<sup>34</sup> Cf. pp. 31-34.

<sup>35</sup> Cf. pp. 39-40.

<sup>36</sup> Cf. pp. 28-29.

<sup>37</sup> *History of the Rensselaer Polytechnic Institute, 1824-1914* p. 9.

6. In Massachusetts, which was the pioneer state in establishing high schools, chemistry very early secured a place in the curriculum. The first high school was established in 1821<sup>38</sup> and chemistry was first offered as a high-school subject in 1826.<sup>39</sup> In 1857 Massachusetts passed a law which required every town of 500 families to establish a school in which among other subjects chemistry should be taught.<sup>40</sup>

7. In Ohio in 1854, 26.6 per cent of all high-school students were enrolled in classes in chemistry.<sup>41</sup>

8. In 1867 many of the high schools of the larger cities in all parts of the United States provided instruction in chemistry.<sup>42</sup>

<sup>38</sup> *History of Franklin High School of Philadelphia* p. 29.

<sup>39</sup> Boston High School for Girls. Extracts from the Records of the Boston School Committee. *American Journal of Education* 1:99.

<sup>40</sup> *Twenty-fourth Annual Report of the Massachusetts Board of Education* together with the *Twenty-fourth Annual Report of the Secretary of the Board* 1861 p. 91.

<sup>41</sup> Cf. p. 45.

<sup>42</sup> Rules and Regulations of Public Schools. Barnard's *American Journal of Education* 19:463.

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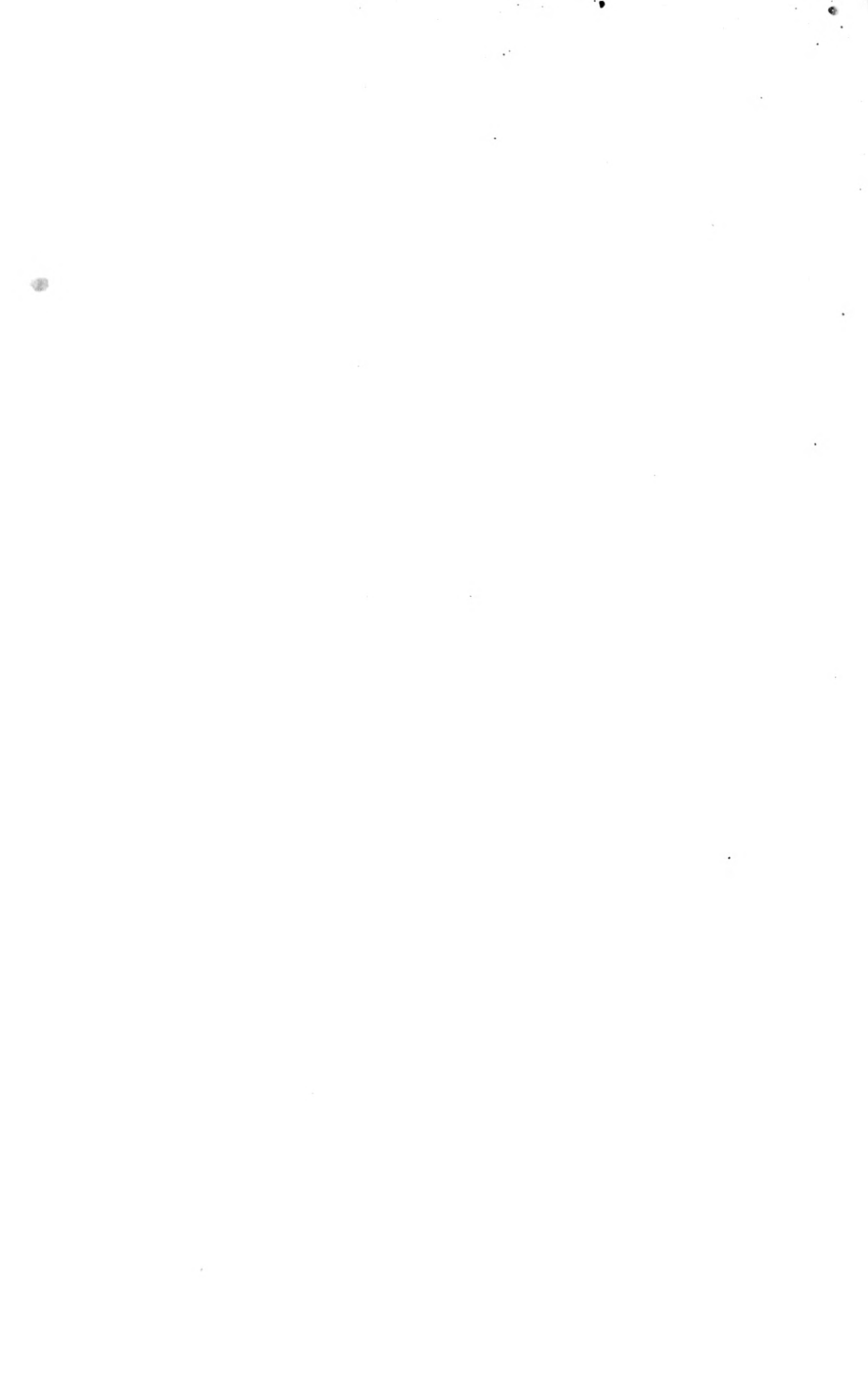
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